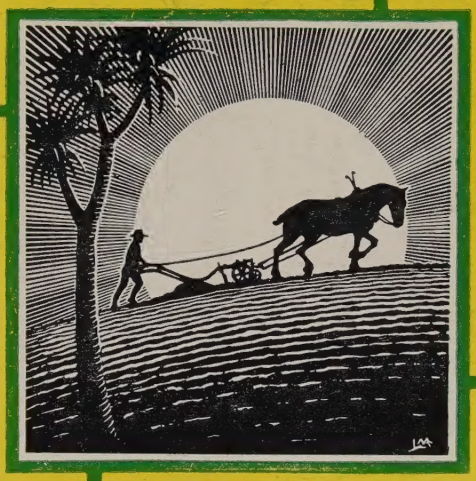
6d.

THE Journal OF AGRICULTURE

VOL. 61
No. 2

AUGUST
1940

IMPERIAL MYCOLOGICAL INSTITUTE
1 NOV 1940



ONWARD

Issued by
THE NEW ZEALAND
DEPARTMENT OF AGRICULTURE

MANNINGS

ESTD. 1893.

VETERINARY REMEDIES

LOOK FOR THE NAME—

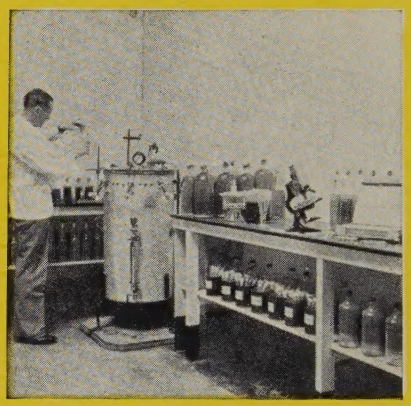
MANNINGS

When You Are Buying Veterinary Remedies ——

IT STANDS FOR . . .

"RELIABILITY AND PROTECTION"

The firm of Mannings has been manufacturing Veterinary Remedies for over 40 years. Each remedy is prepared according to the latest Scientific Research and is tested for efficiency and purity in Mannings Bacteriological and Chemical Laboratory. The result is a Reliable Product for Protection of your Stock.



Make sure it is *"A Mannings Veterinary Remedy"*

Listed below are many of the remedies manufactured by MANNINGS:—

After Calving Drench.
Mannochlor—Chlorine Antiseptic.
Vitalick—mineral Lick.
Docking Fluid.
Worm Concentrate.
Foot Rot Ointment.
Green Cooling Drench.
Paralysis Powders—stimulating.
Antiseptic Cow Pessaries.
Veterinary Antiseptic.
Black Pock Paint.
Black Pock Powder.
Vitafluid—for Collapse.
Vitamin Concentrate.
Impaction Powder.
Wax Teat Dilators.
Vetrine "C" Milk Fever Drench.
Stagger Drench—grass Staggers.
Scour Cordial.
Mannings New Vaccine—for Mammitis.
Red Water Drench.
Diamond Drench—General Drench.
Worm Drench.
Horse Blister.
Liquid Blister.
Stock Iodine.
Pig Tonic.
Colic Drench.
Teat Ointment.
Fluke Drench.

Write for FREE Catalogue: Obtainable from . . .

MANNINGS LTD.

REGISTERED CHEMISTS

85 VICTORIA STREET, HAMILTON, N.Z.

And Storekeeper and Stock Firm Agents throughout the North Island.

TARANAKI AGENTS: Farmers' Co-op. Organisation Society of N.Z., Ltd.

NORTH AUCKLAND AGENTS: North Auckland Farmers' Co-op. Ltd.

The New Zealand Journal of Agriculture

Published by direction of the Hon. W. LEE MARTIN, Minister of Agriculture.

Vol. 61 WELLINGTON, AUGUST 15, 1940. No. 2

Fourteen Point Agricultural Production Plan For New Zealand

— By —
R. B. TENNENT,
Director of Primary Production,
Wellington.

THE farmers' part in the present war is so evident that it needs no stressing. "Increased production!" is the general slogan, and there can be no question that the farmers of this country are fully alive to the part which they have to play, and, given a good season during the coming production year, there can be no doubt that our production figures will show in many respects large increases.

During the past month the National Council of Primary Production has been making a drive with the object of focussing the farmer's attention more directly on the essential part he has to play during the war. As a result of organised addresses throughout the country delivered by leaders of the farming community, committees have been set up in all localities pledged to do everything possible to implement the Dominion plan for increased production—a plan well within the Dominion's capabilities.

The production plan, as recently announced in the Press by the Acting-Minister of Agriculture, Hon. F. Langstone, is a clear-cut statement of the objectives to which farmers should direct their energies. The plan will strengthen and stabilise the structure of our primary industries as in essence it represents the best in farm practice and stock management. From its plastic but all-embracing nature it will allow the individual ample scope in the choice of lines along which he can best increase his production.

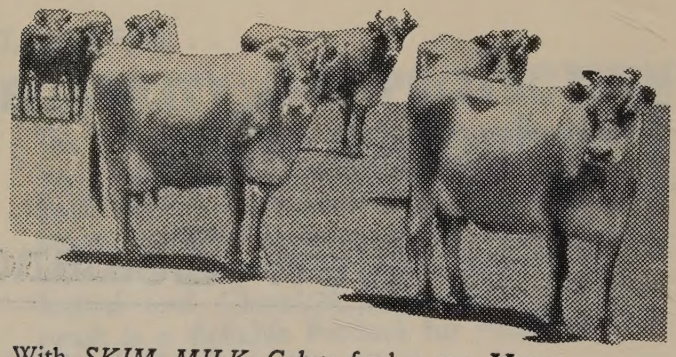
Fourteen Point Plan.

The objective for New Zealand farmers in the coming season can in the main be summarised in the following fourteen points:—

(1) The growing of additional areas of supplementary forage crops.

These crops, such as rape, turnips, swedes, chou moellier, mangels, etc., will facilitate the fattening and wintering of stock, thereby (a) more adequately feeding the present stock carried, and (b) gradually increasing summer and winter carrying capacity.

TODAY'S MOOSE FED CALVES make TOMORROW'S HERD



With *SKIM MILK Calves* feed 2 ozs. Moose daily, rising gradually to 4 ozs.

With *WHEY FED Calves* feed 3 ozs. Moose daily, rising to 6 ozs.

Moose can be fed in the early stages by mixing first with boiling water and then with Skim Milk or Whey. Later just feed dry in the bottom of the buckets after the by-product.

Feed Moose to your Calves — see the DIFFERENCE good feeding makes.

Write *today* for free literature — and profit later from a *better herd.*

★ Moose Oil-Cake Meal is RICH IN FAT which remedies the deficiency of Fat in Whey and Skim Milk. Each bag of Moose contains approximately 1 gallon of Linseed Oil.

★ Moose also supplies rich ***easily digested nourishment*** in a form the youngest calf can handle.

★ Moose is a COMPLETE CALF FOOD. Moose keeps calves vigorous, healthy and growing fast.

W. & R. FLETCHER (N.Z.) LTD., Dept.
P.O. Box 663, Wellington.
Please send me free information on latest methods of Calf Feeding.

Name .....

Address .....

.....

J. A.

MOOSE

LINSEED OIL CAKE NUTS AND MEAL

(2) The saving of all surplus grass for hay and silage should be a definite objective.

This offers considerable possibilities in conserving and utilising material which might otherwise go to waste; it is a sound practice, and should be profit-earning. Material with a potential value, such as wheat straw, should be saved.

(3) Increasing our cheese production by at least 15,000 to 20,000 tons.

Suppliers at a reasonable distance from cheese factories are being asked to deliver milk all the season, and the peak production of cheese factories is to be maintained by more distant suppliers delivering milk to cheese factories at the beginning and end of the season.

(4) So far as possible maintaining butterfat production at its present level.

Every endeavour should be made by topdressing and the provision of adequate feed to maintain our dairy herds at the highest peak of production so that the Dominion may retain its present output of butter and increase its output of cheese as outlined above.

(5) The production this season of an additional 10,000 tons of bacon.

Our objective here is clear-cut and definite. Every dairy farmer should strive his utmost to carry more pigs to baconer weight. This will call for the immediate planning of crops and feed for the coming season and suitable accommodation for an increased number of pigs. The attainment of our objective in this connectiontion will mean that our losses in pig-meat production experienced in recent seasons have been recovered. It will not represent a new high-level record. We have produced such quantities before, and we should be able to do so again.

(6) Growing 20,000 to 30,000 acres of feed barley in the North Island.

This will be used primarily for pig feed, and will avoid the importation of considerable quantities of feed barley from Australia. A minimum price of 3s. 6d. per bushel on trucks at farmer's station, sacks in, has been guaranteed for Cape barley, and where malting barley is grown higher prices will rule.

(7) Raising our maize acreage from 7,600 to 11,000 acres.

Maize is an important item of stock and poultry food, and considerable quantities have to be imported from overseas each year to meet our requirements. By increasing the Dominion's maize acreage, farmers, particularly in the Bay of Plenty and Poverty Bay districts, can give an excellent lead in increasing production to producers elsewhere. From the enthusiastic manner in which both Maori and pakeha farmers are making arrangements to increase their areas, it would appear that the objective of 11,000 acres will be readily attained.

(8) Maintenance of output of mutton and lamb.

There are indications that the maintenance of output of mutton and lamb during 1940-41 will be difficult unless the season proves particularly favourable. Killings of mature sheep were heavy during the past season and, if repeated, would affect the stock organisation of sheep farmers to the possible disadvantage of output during succeeding years. Our objective in this connection should be the highest possible standard of stock and feed management and the preservation of our potential capacity to produce increasing quantities of high-grade meat.

(9) Increasing the output of wool again is of great importance.

Over a period wool production can be increased by intelligent selection and culling, and more rapidly by using improved rams. In the immediate present higher lambing percentages will lead to more sheep being shorn and more wool production. While it inevitably fluctuates with seasonal conditions, wool production can nevertheless be increased by all-round better feeding of our sheep, particularly in winter, when supplementary forage crops can do much to sustain it. Furthermore, the wool will in most cases be greatly improved by the elimination of tender, broken and cotted fleeces. Also, more attention might be paid to the saving of "dead-wool" and avoiding any waste at shearing-time, however small.

(10) Maintenance of beef production.

As in the case of mutton and lamb, our output of beef during 1939-40 has constituted a record, and unless considerable care is exercised in stock management and maintenance our resources for potential rapid advancement will be depleted. Although the chilled beef market is now closed, we must envisage its renewal after hostilities have ceased, and therefore the highest possible degree of efficiency must be maintained in the management of our beef stock.

(11) Egg production.

Eggs and egg products are of considerable importance when the staple diet of a community is restricted. Export of eggs in shell is difficult under conditions where shipping might be delayed, and it is apparent that export in the form of pulp offers many advantages in collection and preservation and transport. We must see to it that supplies are available so that the requirements of the United Kingdom, whatever they may be, can be met as far as is practicable within our production programme.

(12) The growing of 300,000 acres of wheat for our own consumption.

This will conserve Australian funds, and is an objective which should be easily attained provided farmers make the necessary effort to break up more land, which re-

quires resowing ultimately in good pasture. Our average wheat acreage is in the vicinity of 240,000 acres, so that a leeway of approximately 60,000 acres has to be made up to attain this desirable end.

(13) The growing and processing of 14,000 acres of linen flax.

This has been specifically requested by the British authorities, who find themselves in difficulties in so far as linen flax supplies are concerned. The New Zealand Government has undertaken to grow and process 14,000 acres, and already farmers have been asked to sign contracts for growing this crop. A new and remunerative industry will thus be established, and there appears to be no doubt that the acreage asked for will be sown.

(14) Increasing to the utmost the growing of grass and clover seeds in addition to being self-supporting in other small seeds, such as rape, turnips, mangolds, etc.

Quite apart from being necessary, this should prove a lucrative undertaking for farmers. Not only will these seeds be required for our own use, but Britain herself is likely to be short of supplies. In future we will have to depend upon our own resources for forage crop seeds which previously have been imported, and steps are being taken to ensure supplies of such seeds. Every farmer in New Zealand should make a point this year of saving more grass and clover seed, and by so doing he will materially assist the Dominion in her effort of increasing production.

The above fourteen points of the Dominion's Agricultural Production Plan are clear-cut, decisive, non-revolutionary and, in the main, should be profit-earning. Many other avenues of production will present themselves to farmers, and everything possible should be done to exploit the fertility of our farming areas. The National Council of Primary Production gives its unqualified support to the production plan, and urges every farmer in New Zealand to do his utmost to assist its fulfilment.

If the 80,000 farmers in the Dominion each contribute during the coming season to increasing production, even though the individual efforts may appear slight, the aggregate effort will undoubtedly result in a phenomenal output, reflecting the greatest credit on our farming community and giving them the satisfaction of knowing that they have contributed towards the maintenance of a food supply which is so vital in times of war and disruption.

We are the original designers and first to introduce the "Giant" Disc.

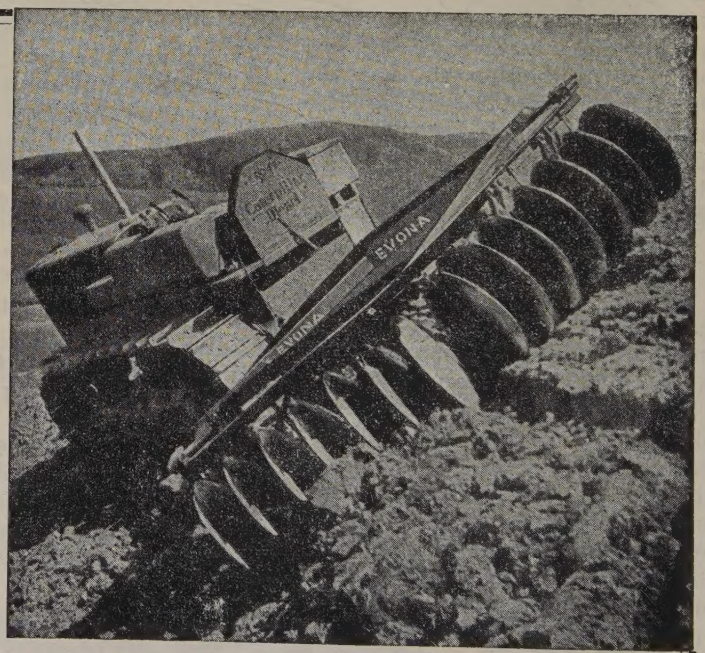
"EVONA" GIANT DISC and GIANT CHAIN HARROW

From rough country to a seed bed

● WRITE for more particulars that will interest you, including names of those who are using similar discs with wonderful results. No obligation at all.

F.T.F. EVANS & CO.

EVONA IMPLEMENT WORKS, AUCKLAND, C.1, SOLE MAKERS.



This photograph shows the "Giant" Disc at work on steep hillsides. It has brought in hundreds of acres of virgin land of all classes for its many users. The "Evona Giant" Disc has also proved remarkably effective on blackberry, scrub, ti-tree, tall-fescue, rank paspalum, fern, etc., doing up to 10 acres double cut virgin land in an 8-hour day. The "Evona Giant Chain" Harrow will clean up all rubbish, pull out loose timber, pull down any mounds, and fill up hollows. Work the two implements and you will have virgin land brought into a seed bed of fine even tilth. **Note the deep cut when set is applied.**

Horse Breeding

PRICES for draught horses are still considered low, and consequently there is not the incentive to encourage more breeding of heavy horses, states the Director of the Livestock Division in his annual report. It is hoped, however, that prices for draught horses are improving in Australia and this will improve the prospects in this country. The restriction on the use of mechanical power owing to war conditions is also another hopeful sign for the breeder of heavy horses.

During the year the Stallions Act was in operation. This Act was introduced with a view to ensuring the soundness of draught stallions used for breeding purposes. Although compulsory examination applied only to rising two-year-old stallions in the first year of operation of the Act, it is gratifying to record that a total of thirty-six stallions of the older age group were actually examined for certificates of soundness. Altogether a total of forty-two stallions were examined for soundness, thirty-seven of these being passed by the examiners.

Operations of Stallions Act Reviewed

The application of the Act will gradually eliminate the unsound stallions, at the same time not seriously interfering with the number of sires required for breeding purposes.

In regard to the breeding of light horses, the Remounts Encouragement Act of 1914 was in operation again last year. Under this Act a subsidy was paid to owners of selected and approved stallions stationed at several centres over both islands. This subsidy enabled the owners of approved mares to obtain the services of these stallions at reduced fees. Altogether a total of thirty-nine stallions were subsidised, as compared with thirty-two in the previous year. The total number of mares approved for service was 1339, so that the scheme may be said to be well established and well patronised. It should do much to encourage the breeding of light horses and instil an interest in this aspect of livestock production.

It may be possible to exercise a more rigid selection in the type of mare submitted for approval as time goes on, so that a more uniform or more suitable progeny may be obtained. So far, however, the scheme is definitely in the right direction in encouraging the breeding of a type of horse which was being seriously neglected.

The assistance given by the New Zealand Racing Conference, the New Zealand Trotting Conference, and other kindred bodies is much appreciated. Special thanks are due to the members of the District Remount Committees, who supervise the operation of the remount scheme in their districts.

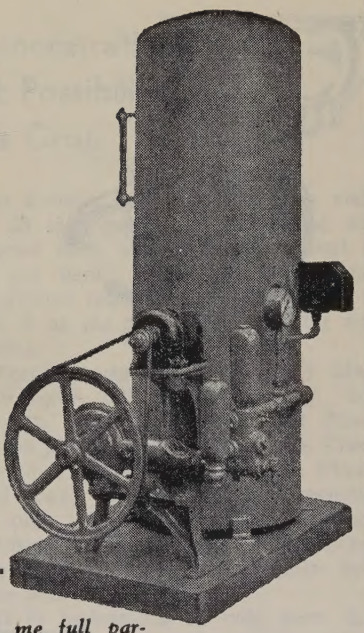
W. H. PRICE & Son, Ltd.

34-36 Manchester Street, - - CHRISTCHURCH.

Box 1084. Est. 1879. Tel. 36-072

Manufacturers of "RENOWN" PUMPS AND AUTOMATIC PRESSURE SYSTEMS.

THE illustration shows Model number 31 "Renown" Automatic High Pressure Outfit. It requires only one-quarter to one-third h.p. motor to supply 240 gallons per hour at a pressure of 60 lbs. It is fitted with an automatic pressure switch and air volume control. The tank is constructed of heavy steel electrically welded and tested to 120 lbs. pressure.



For full particulars of all pumps post this coupon.

Please send me full particulars of "Renown" Pumps and Pressure systems.

Name : .....

Address : .....

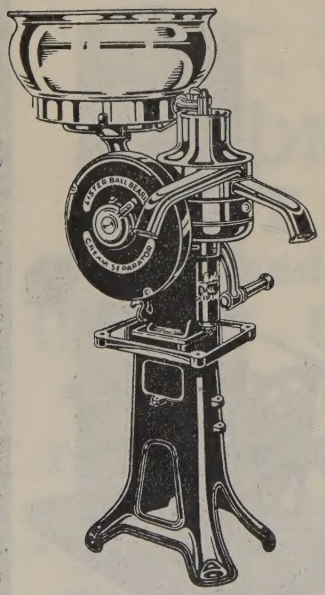
..... J.A.

HELP BRITAIN!

THE BRITISH GOVERNMENT STATES— "Keeping up Britain's Exports will help her win the war"

DAIRY FARMERS, in buying the **BRITISH LISTER SEPARATOR** you are helping Britain and helping yourself.

The 'LISTER' with 'STAYBRITE' Stainless Steel Bowl and Discs is the World's Cleanest skimming Separator.



The **Lister**

IS 100% BRITISH

SEND FOR DETAILS TO

LISTER SEPARATOR CO. (N.Z.) LTD.

Head Office: AUCKLAND.

Branches: WHANGAREI, HAMILTON, PALMERSTON NORTH, CHRISTCHURCH.

Sugar Beet Will Fatten Your Autumn Litters

— By —
C. J. HAMBLYN,
Fields Superintendent, Palmerston North,
and
J. E. DAVIES,
Instructor in Agriculture, Hawera.

Experience at Demonstration Farm Shows Great Possibilities For This Crop

THE experience of the past three seasons at the Waimate West Demonstration Farm in South Taranaki with the feeding of sugar beet to pigs for the purpose of carrying autumn litters through the winter has convinced the Farm Committee, which comprises practical dairy farmers, that no other root or forage crop of the many used in past seasons at the farm for this purpose can compare with sugar beet in keeping pigs of all ages in a fit and thriving condition.

Sugar beet has been fed with excellent results to pigs ranging from suckers and weaners to mature sows. The beet has been fed direct from the field in April while still making rapid growth and, in contrast, from storage heaps as late as November after being out of the ground for four to five months.

The bulky tops were relished by the pigs, and neither the fresh tops nor the immature roots have caused any sign of scour, even in quite young pigs—a very important advantage over mangolds. The mature beet, when stored in heaps and exposed to rain and frost in the winter and spring, has kept remarkably well.

Remarkable results have been obtained at the Waimate West Demonstration Farm with the feeding of sugar beet to carry autumn litters through the winter. Sugar beet established a superior feeding value to other root crops, and it was possible to turn off two litters a year as baconers without recourse to a great deal of expensive concentrate feeding.

Start of Experiment.

In 1937 one acre of sugar beet was grown at the farm as one of several experimental areas in connection with a sugar-beet-growing survey. The crop was quite a good one, giving a yield of 25 tons per acre of cleaned and topped beet, with a sugar content of 16 per cent. As the crop was not otherwise required, it was decided to use it as pig feed in the winter and spring.

Feeding was started in early May. The roots, still with a strong top growth, were pulled and fed direct to the pigs on hand at the time. These included dry sows, sows with litters, and young pigs ranging from weaners to pigs three and four months old. Without exception, the pigs relished the sugar beet, eating greedily both tops and roots.

It is interesting to note here that the full-grown tops are estimated to

Photo Above—

The Group 2 pigs which were fed on sugar beet plus meat-meal. Note how the sugar beet is being devoured.

contain about one-third of the feeding value of the roots, but, of course, cannot be kept for pig feeding over an extended period.

Within three weeks there began a remarkable improvement in the general appearance and condition of all pigs receiving sugar beet as compared with others which were fed on carrots.

In July the crop was pulled, and after removing the tops which had died off to some extent, the roots were stacked in the open at the pig pens and were fed out until the end of October, remaining quite sound throughout.

Among the pigs fed on sugar beet was a line of two litters farrowed late in February. Sugar beet feeding was started in May, when some whey was still available. In June and July sugar beet alone was available, and the pigs continued to thrive. In August whey feeding as an addition to the sugar beet was again instituted, but the limited amount of whey available was supplemented by sugar beet.

These pigs, 14 in number, were all away as baconers before the end of October, and were graded No. 1 prime. Another later litter which was not ready for the works when the sugar beet was finished went back in condition rapidly when a change was made to pollard and meat-meal as the supplement.

Pigs Thrive

During the winter of 1938 a smaller area of sugar beet was again used for winter feeding with entirely satisfactory results. One litter fed on sugar beet as the root ration was compared with a similar litter on mangolds and carrots, the usual root crops formerly used on the farm.

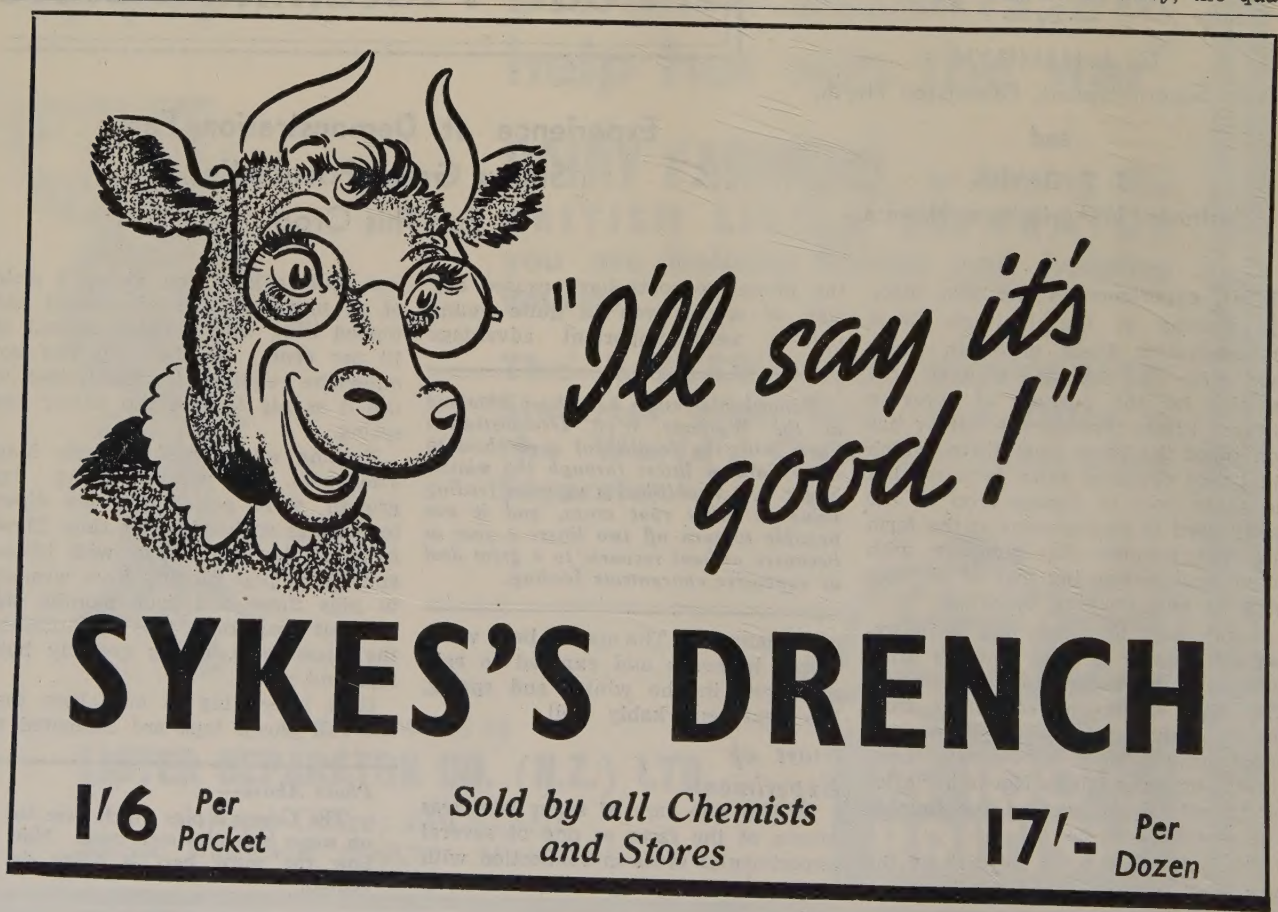
The pigs receiving the sugar beet were away a month to six weeks earlier than those on mangolds and carrots, and throughout the winter and early spring showed a marked superiority in their general appearance and progress. The pigs fed on sugar beet were always sleek and appeared warm, while those on mangolds and carrots had a harsh, thick coat and were tucked up whenever it was cold.

A number of South Taranaki farmers had also tried small areas of sugar beet that season, and reported pleasing results. As much interest had been created, it was decided to carry out a trial the next season to compare more accurately sugar beet with mangolds in the wintering and fattening of autumn litters.

Mangolds v. Sugar Beet.

The trial began on June 1, 1939. Twenty-four pigs of a line farrowed in February and 15 weeks old at the start of the trial were divided into four groups of six pigs. Each group was housed and fed separately in adjacent ¼-acre grass runs, and all pigs were individually identified and weighed fortnightly.

Group 1 was fed on sugar beet to appetite; group 2 on sugar beet and ½lb of meat-meal per pig daily; group 3 on mangolds to appetite; and group 4 on mangolds and ½lb of meat-meal per pig daily. Whey was added to the ration of each group towards the end of July, and was continued to the end of the trial. Each group was fed the same amount of whey, the quan-



tity ranging from three up to four gallons per pig daily.

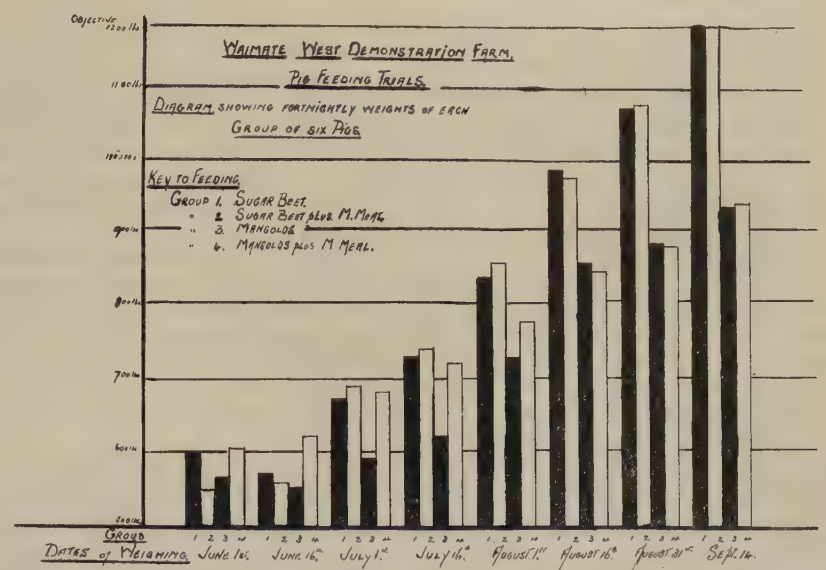
The main object of the trial was to compare the progress of each group up to the objective of 1200lb liveweight or an average of 200lb per pig.

The accompanying graph demonstrates clearly the progress of each group towards this objective.

Comments on The Graph.

By September 14, after 106 days' feeding, group 1 fed on sugar beet and group 2 on sugar beet and meat-meal had reached the objective. Group 1 had shown a liveweight gain per pig of 103lb in 106 days, or 0.94lb per day, and group 2 an average gain of 112lb in 106 days, or 1.05lb per day. On the other hand, group 3 (fed on mangolds) was still 254lb from the objective, and had put on only 63lb per pig or 0.59lb per day, while group 4 (fed on mangolds and meat-meal) was 250lb short of the 1200lb, and had put on 59lb per pig, or 0.55lb per day.

While it may appear from the final results that the addition of ½lb of meat-meal per day to the root ration of sugar beet or mangolds has not given a payable return in increased


Objective 1200 lbs
Waimate West Demonstration Farm.
Pig Feeding Trials.
Diagram showing fortnightly weights of each Group of six Pigs.
Key to Feeding
Group 1. Sugar Beet.
" 2. Sugar Beet plus M. Meal
" 3. Mangolds
" 4. Mangolds plus M Meal.
Group
Dates of Weighing June 1st. June 16th. July 1st. July 16th. August 1st. August 16th. August 31st. Sept. 14.

pig meat, two facts shown by the graph should be noted. First, both groups fed additional meat-meal showed an appreciable increase in liveweight in the first fortnight, while both groups with no meat-meal showed a definite fall in weight. Secondly, during the period June 1 to July 16, when no whey was available, the addition of meat-meal to the ration gave quite satisfactory results.

In the case of the pigs fed with sugar beet the meat-meal group put on in these six weeks 195lb as compared with 137lb for those getting sugar beet alone, and the mangold and meat-meal group 111lb as compared with only 56lb for the group fed mangolds alone.

Superior Feed Value.

Comparisons from August on between the mangold and mangold plus meat-meal groups were discounted by the fact that one pig in the latter group went off its feed and did not make satisfactory progress until towards the end of the trial.

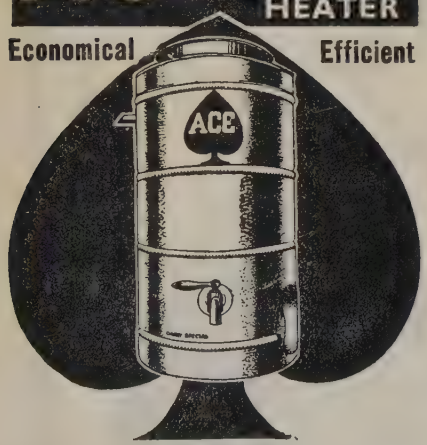
The comparisons between the first three groups, however, serve to demonstrate the superior feeding value of the sugar beet throughout. The pigs fed on sugar beet put on weight at the satisfactory rate of 0.94lb per day, and the mangold-fed pigs at the relatively poor rate of .59lb per day. This result is in accordance with the relative feeding value of sugar beet and mangolds.

The trial also indicates that, while sugar beet in the winter and sugar beet plus whey as the pigs require more food is a satisfactory ration for fattening pigs, the addition of concentrates such as meat-meal or grain is required to speed up the fattening of baconers when fed mangolds if they are to be got away before the next litters are ready to use the feed available.

Quantity Eaten.

It is interesting to note that throughout the trial the amount of roots eaten daily by each group averaged approximately the same. Beginning with 15lb per pig per day in June, the quantity was increased to 18lb and finally to 22lb per pig. The quantity eaten depended on the stomach capacity of the pigs rather than on the feeding value of the roots. Because sugar beet contains from 20 to 25 per cent. of dry matter compared with 10 to 12 per cent. in mangolds, a pig eating 20lb of sugar beet was getting about twice as much actual food in the day as a pig eating the same ration of mangolds. In other words, a 25-ton crop of sugar beet has the feeding value of up to 50 tons of mangolds.

Of still more importance, however, is the fact that, because of their limited stomach capacity, young and growing pigs cannot eat sufficient of the more bulky lower feeding value roots, such as mangolds, swedes, carrots, etc., to give them the food required to make satisfactory weight increases. Further, the relatively more digestible and

ACE "DAIRY SPECIAL" ELECTRIC HEATER
Economical Efficient


MORE FEATURES THAN ANY OTHER DAIRY HEATER
—AT NO EXTRA COST!
Enquire from your Agent or send for leaflet
SPEEDWAY
STEAM PRODUCTS LTD.,
51 Albert Street, Auckland.
South Island Distributors:
A. H. Turnbull & Co. Ltd., Christchurch.

greater heat and energy-producing qualities of the sugar in the beet gives it another definite advantage over mangolds, and even grain or meals, as a winter pig food.

Quality of Pigs As Baconers.

In order to ascertain the effect of the different rations on the quality of the carcasses as bacon, each pig was fed on to a killing weight of 200lb or thereabouts, and each group was carefully graded at the works. With the exception of one pig in group 3, the whole line of 24 pigs graded No. 1 prime, and the graders described them as an excellent line of spring baconers just right for loin and back fat. The No. 2 group fed on sugar beet and meat-meal was considered the best group of a very even lot.

Details of the full trail are given in the table at the end of this article.

Possibilities Of Sugar Beet.

The experience of the Waimate West Demonstration Farm in the feeding of sugar beet to autumn litters has indicated that sugar beet has important possibilities as a root crop for this purpose.

It should be possible to grow satisfactory crops of sugar beet wherever mangolds can be grown well, and this is the case in most dairying districts. Crops of 20 to 25 tons per acre and more have been grown in South Taranaki, the Manawatu, Hawke's Bay, and the Waikato.

While it is admitted that heavier crops of mangolds and carrots or swedes can be grown and that more pigs can be fed during the winter from an acre of these crops than from an acre of sugar beet, the fact remains that young growing pigs cannot eat sufficient mangolds, carrots, swedes, or chou moellier to put on weight at a satisfactory rate, but they can when fed on sugar beet.

Effect On Farrowing.

The provision of a cheap, home-grown root crop which, by itself, is capable of carrying pigs through the winter months in a fit and thriving condition when dairy by-products are not available would allow for the main farrowing of sows in February, March, and April, and again in August, September, and October. These months are much more favourable for farrowing from the point of view of weather conditions than either the three winter months or mid-summer.

If litters farrowed in February, March, and April can be brought through the winter, putting on up to 1lb a day when fed on sugar beet, and can be got away in seven to seven and a half months or less as heavy baconers with the use of a partial ration of whey or skim milk, then

YET ANOTHER CODLIVINE
CHAMPIONSHIP WINNER
"WESTVALE HUIA"
With Her Youthful Owner.
"Westvale Huia" won the North Taranaki School Championship and is another example of Codlivine feeding. At the New Plymouth Show alone Codlivine Fed Stock secured 1st, 2nd, 3rd, 4th and 5th places out of thirteen competitors in one class. CODLIVINE is manufactured with the finest Codliver Oil, rich in Vitamins A and D.
OSMOND & Sons N.Z. LTD.
P.O. BOX 460 WELLINGTON

the second litters in August, September, and October can have all the dairy by-products for the next six or seven months.

The turning out of two litters a year as baconers then becomes reasonable without recourse to a great deal of expensive concentrate feeding. This has been the experience at the Waimate West Demonstration Farm since sugar beet has been grown as the root crop for pigs.

NOTE: Comparing the daily liveweight gain given in this table with that shown by the graph, it will be noted that the mangold-fed groups show a much better average gain for the full trial. This is due to the fact that more whey was available in October and November to the mangold groups, which were also able to get more food from the grass in the pens than the earlier slaughtered sugar beet groups. It was during the actual wintering of the pigs that the sugar beet showed to real advantage.

For the benefit of farmers interested in sugar beet as a winter pig food full details for the growing of this crop will be given in a later issue of the "Journal."

SUMMARY OF SUGAR BEET v. MANGOLDS PIG FEEDING TRIAL.

Feeding: June 1 to slaughter—

Group 1: Sugar beet to appetite.
Group 2: Sugar beet to appetite + ½lb. meat meal per pig.
Group 3: Mangolds to appetite.
Group 4: Mangolds to appetite + ½lb. meat meal per pig.

All groups fed whey 3-4 gallons in addition from August - to slaughter.

Group No.	Pig No.	1/6/39. Liveweigh	Date Killed.	Liveweight at Killing.	Days Fed.	Weight Increase per day.	Deadweight	Shoulder fat in ¾-ins.	Loin fat in ¾-ins.	Grade	Length of Side.
1 Sugar Beet	1	86	5/10/39	218	126	1.05	149	12	9	1	31
	2	102	7/9/39	209	98	1.09	139	11	8	1	31
	3	90	28/9/39	211	119	1.02	144	11	7	1	30
	4	98	5/10/39	214	126	0.92	148	12	9	1	30
	5	108	14/9/39	215	105	1.08	146	14	9	1	30
	6	116	14/9/39	208	105	0.88	139	13	9	1	29
Average		100		212.5	113.2	1.00	144.1	12.1	8.5		30.1
2 Sugar Beet + Meat Meal	1	87	14/9/39	202	105	1.10	135	9	6	1	30
	2	101	7/9/39	207	98	1.07	144	11	9	1	30
	3	98	14/9/39	212	105	1.09	143	13	8	1	30
	4	105	14/9/39	216	105	1.06	146	13	9	1	30
	5	76	5/10/39	204	126	1.02	139	9	7	1	30½
	6	82	28/9/39	213	119	1.10	152	14	10	1	29
Average		91.7		209.0	109.7	1.07	143.1	11.5	8.1		29.9
3 Mangolds	1	107	16/10/39	223	137	0.85	148	13	9	1	30
	2	104	16/10/39	202	137	0.72	130	10	6	1	30
	3	85	27/11/39	207	179	0.68	142	14	11	2	30
	4	94	16/10/39	222	137	0.93	146	11	9	1	29
	5	92	30/10/39	216	151	0.82	130	11	8	1	29
	6	86	30/10/39	203	151	0.77	150	12	9	1	31
Average		94.7		212.1	148.7	0.79	141.0	11.8	9.0		29.8
4 Mangolds + Meat Meal	1	97	16/10/39	210	137	0.82	142	11	9	1	31
	2	109	30/10/39	218	151	0.72	152	12	9	1	30
	3	89	27/11/39	190	179	0.56	142	11	9	1	30
	4	95	30/10/39	215	151	0.79	145	12	8	1	30
	5	108	16/10/39	205	137	0.71	137	11	9	1	29
	6	107	5/10/39	212	126	0.83	138	13	9	1	29
Average		100.8		208.3	146.8	0.74	142.6	11.6	8.8		29.8

DECLARATION OF WAR!

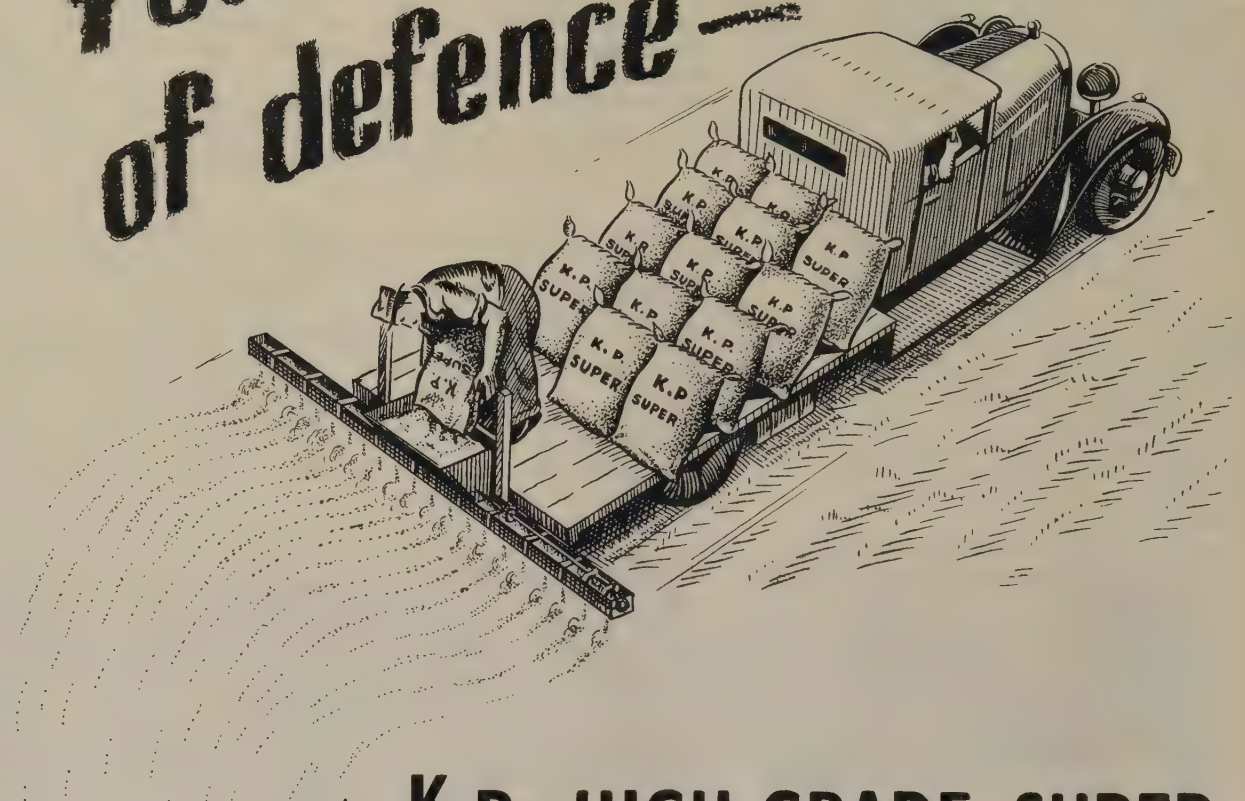
PATTEN'S MILKEEZE has declared war on many of the troubles in the milking shed.

JOIN THE ARMY OF MILKEEZE USERS. SAVE TIME IN THE MILKING SHED.

A regular application of Milkeeze at every milking will keep teats and udders in excellent condition.

Does not taint the milk. Sold by all Stores in 1 lb. tins, 4 lb. billies, and 36 lb. tins.

Your best line of defence—



K.P. HIGH-GRADE SUPER

AND OTHER FERTILIZERS

are the answer to our Empire's urgent call for maximum primary production to-day, and the basis of every well-planned topdressing programme.

Every bag of K.P. Fertilizers brings you the double benefit of minimum outlay and progressively greater returns both in quality and quantity——

SO SEND IN YOUR ORDERS NOW TO

KEMPTHORNE PROSSER & CO'S N.Z. DRUG CO. LTD.

PIONEERS OF N.Z.'s FERTILIZER INDUSTRY.

AUCKLAND WANGANUI CHRISTCHURCH DUNEDIN

Feed For Your Stock

Pampas Grass Is A Valuable Winter Fodder

"Where the soil and climatic conditions appear to be suitable, the possibilities of pampas grass as a valuable fodder plant should certainly be exploited. Once established, upkeep charges are low, utilisation is conveniently simple, and under a system of proper management the farmer is completely assured of a valuable reserve of nutritive and palatable winter feed regardless of the vagaries of the season."

— By —

P. S. SYME,

Instructor in Agriculture,

Warkworth.

ALTHOUGH only a comparatively few years have elapsed since pampas grass was first introduced to the farming community as a useful fodder crop rather than an ornamental garden shrub, this plant is now widely established on dairy farms throughout the warmer districts of New Zealand.

Judging by its rough and fibrous appearance, one might well suppose that the plant would be both unpalatable and indigestible. Surprising as it may seem, however, once accustomed to pampas, stock will eat it with evident relish, and its high feeding value as shown by analysis is confirmed by practical farming experience. Where other kinds of supplementary feed cannot conveniently be grown, pampas may well prove to be a particularly useful crop, provided that the climatic and soil conditions are suitable to its establishment and vigorous growth.

Quality of Soil Important

When pampas was first boomed some too enthusiastic advocates claimed that, because of its extensive and deep rooting system, the quality of the soil was not of great importance. That this is very far from being correct has been the sad experience of many farmers who were encouraged to believe that any odd unproductive corner of the farm could profitably be planted with pampas grass. In its native home, the grass is found growing mainly on rich, moist depressions or near water courses, and, contrary to what one might assume from the name, it is not found on the wide, grassy expanses of so-called pampas.

When planted on dry, exposed ridges or on very poor, heavy, or waterlogged land pampas is very likely to prove a failure, and the ideal soil is undoubtedly a free, moist—but not waterlogged—alluvial soil. In the north, pampas has succeeded well on certain of the better flats, but on the average run of gumland failure has been recorded much more frequently than success.

Although it has been extensively tried out in different localities and on a wide range of soil types in the South Island, plantings of pampas have generally proved a failure, and, as a fodder crop it can safely be recommended only for certain of the warmer districts of the North Island.

Establishment of Pampas

As pampas plants are dioecious—the male and female elements being on separate plants—it is rather difficult to procure live seed unless both types of plant are growing close together. For practical purposes, however, the male and female plants can readily be distinguished by the size of the flower

heads. Those of the female are by far the larger as well as the more handsome, and, with due care, it is possible to obtain seed germinating up to 70 per cent., from which plants can easily be raised.

The seed should be grown in boxes filled with fine, sandy soil, and is best simply dusted on the surface and left uncovered. Moist, warmth, and shade are necessary to secure good and quick germination of the small seeds. In some districts seedling plants can be freely found growing naturally, or they may be cheaply obtained from nurserymen or from the Whangarei Harbour Board.

While such plants may be planted direct in their permanent positions, mortality is liable to be very high unless the ground has been very carefully prepared in advance, so that it may be advisable to bed the small plants in good free soil in the garden for transplanting the following season as well rooted and established plants. If carefully lifted from a light, free soil, such plants do not die back. The roots strike very quickly, and the plant suffers little check.

Toetoe plants growing on the Waiwera-Auckland highway.

Establishment from Root Cuttings

Where mature plants are available, root cuttings from them provide a cheap and effective method of propagation. The usual method of obtaining cuttings is to rope the plant tightly above the crown and trim it across about eighteen inches above the ground level by means of a saw. Rooted stools can then be easily dug out with a spade.

WHY

IS CROSS THE OUTSTANDING TRACTOR FUEL ON THE MARKET

Because its use ensures—

Utmost Power on heavy loads

Quick Starting and Easy Idling

Clean and Flexible Operation on light work

Minimum Crankcase Dilution and

Maximum Economy

THE SHELL COMPANY OF NEW ZEALAND LIMITED
(Incorporated in England)

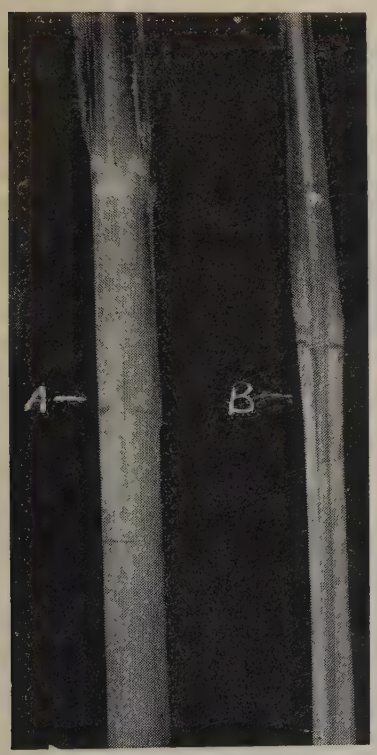
CROSS KEROSINE

CK11

If the mother plant is very big and dense the operation may be expedited by loosening the roots with a judiciously calculated charge of blasting powder. The best cuttings are usually obtained from the outside rather than from the centre of the parent plant.

Distinguishing Pampas from Toetoe

When obtaining cuttings, farmers have frequently gone to considerable trouble to procure plants from a distance under the impression that the numerous tussocks growing naturally in the vicinity were toetoe. Although toetoe and pampas are somewhat similar, they can be very easily and positively distinguished. In pampas, the leaf sheath which clasps round the stalk at the base of the blade is always round, and the midrib is not continued into the sheath. In toetoe, the midrib of the leaf is continued down the sheath, which is consequently oval in shape.



Pampas and toetoe are easily distinguished. In "A" (pampas) the midrib in the leaf is not continued down the sheath, which is consequently round. In "B" (toetoe) the strong midrib of the leaf can be seen continued down the sheath, making it oval in section.

A young stand of pampas established from cuttings.

Readily Eaten By Stock

When pampas was first considered as a fodder crop claims were freely made regarding the superior palatability of certain strains. Whether or not these claims were justified, the fact remains that stock have shown no special preference or dislike when grazing plantations carrying plants of very diverse origin, so that no apprehension need be felt on this score when collecting either cuttings or seedlings.

Site for Plantation

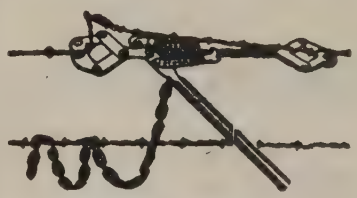
As already mentioned, the idea that pampas will grow anywhere is erroneous. Like any other cultivated plant, its ease of establishment and rapidity of growth are largely dependent on fertility.

Pampas may very well be used to fill an odd corner if the soil is suitable, but, considering its high potential value and the small area of land required, this valuable crop surely deserves something better than the worst piece of land on the farm. Yet, judging from many plantations seen, whether by accident or by design, pampas is often allotted the role of Cinderella, and this only too frequently explains why so many stands have proved utter failures.

Far from being of little significance, as has been claimed, observations carried out at Ruakura on a number of two-year-old stands strongly suggest that fertility is a factor of very prime importance, and that whether the yield is to be 5 tons per acre or 50 tons per acre will depend almost entirely on the quality of the soil.

Apart from this aspect, the site should be near a handy run-off for grazing, and it may be an advantage if the land is such that it can be conveniently worked up before planting, and, if necessary, surface cultivated until the plants are properly established. Needless to say, the area must be well fenced.

HAYES' AUTOMATIC
(SMOOTH GRIP)
WIRE STRAINER
FOR BARBED OR PLAIN WIRE.



From Matangirau, North Auckland:
Dear Sirs, — I received the Grab Strainer and have used it for straining at the post and for splicing broken wires. I have used most kinds of strainers, but consider Hayes' Strainer the best of the lot.
(Sgd.) Frank Gerring.

Strainer is fitted with a 4ft. chain and is complete with wire key and directions for use.

Price only 29/6
Stocked by All Merchants.

Manufactured by
E. HAYES & SON,
OTUREHUA, OTAGO. Phone 4D.

Planting the Stand

The plants should be spaced about 6ft. apart each way, and this will require about 1200 plants per acre. Planting is best performed in the spring, when danger of frost is past, and, under normal conditions, the best results may be expected with late September or early October plantings. In order to assist establishment a handful of super-blood-and-bone in equal parts may be worked in round each plant.

Although the plants may possibly establish even under adverse conditions, a well-prepared bed greatly reduces mortality and results in much faster growth. This is particularly important if small seedling plants have been used.

If cuttings are being planted they should be set at an angle of about 45 degrees rather than vertically. Good plantations can be established either from cuttings or from transplants. Mortality is usually much lower, however, where good transplants are used, and it has also been claimed that the latter stool out into bushes rather more quickly.

Quite apart from special plantations for stock fodder, pampas may very usefully be employed as a shelter belt for stock, and, used in this way, it possesses the added advantage of providing a very cheap and permanent emergency ration for times of scarcity.

Self-sown pampas growing on waste ground. The difference between the male and female flowers can be clearly seen.

Management of Plantation

Once the ground has been planted little further attention is required. If weeds are particularly aggressive, horse-hoeing between the rows may be desirable in the early stages, but a limited amount of weed growth does little harm, and actually serves as a useful shelter for the developing plant. When properly established, pampas will quickly turn the tables, and will even smother out blackberry.

It is claimed that growth is improved if the plants are prevented from seeding by removing the seed heads during the summer.

While there is some difference of opinion regarding the efficacy of top-dressing once the plants are established, it may be mentioned that on a trial carried out on the farm of Mr. A. S. Eyton, Matakana, where a variety of fertilisers was applied, no appreciable benefit resulted. Because of the nature of ground, however, this trial cannot be regarded as conclusive.

Grazing by Stock

If conditions have been favourable the plants may be grazed in the second year after planting out. Too early grazing and too hard a grazing of a young stand, however, is harmful, and it should be emphasised that even well-grown plants cannot withstand constant and persistent grazing.

Stock which have not been accustomed to pampas will more readily eat it if a few of the plants are cut over above the crowns. This results in a very speedy growth of succulent white shoots, and once stock have tasted them they require no further introduction. Pampas may be fed out, but in practice it is generally most conveniently fed off by fencing it off in breaks.

When fed off, the area is usually fired to clean up all litter and any dead shoots or leaves around the plants. It is then closed up to permit regrowth.

Yield of Pampas

Under favourable conditions individual plants may weigh as much as 250 lb. or more within two years of planting, and a yield of 50 tons per acre of useful fodder cannot be regarded as in any way exceptional. As the dry matter analysis of pampas is actually higher than that of swedes or mangolds, it is not surprising to learn that one acre under favourable conditions may winter up to about 100 head of stock if a good run-off is available.

Where the soil and climatic conditions appear to be suitable, the possibilities of this valuable fodder plant should certainly be exploited. Once established, upkeep charges are low, utilisation is conveniently simple, and under a system of proper management the farmer is completely assured of a valuable reserve of nutritive and palatable winter feed regardless of the vagaries of the season.

Farm-acy Earmarks

Guaranteed workmanship and materials. Any design made to order. REPAIRS made to cut like new. Free circular on application.

Farm-acy Eartags

As supplied to N.Z. Government Agricultural Colleges.

Will not rust, stain or pull out. Made of hard brass.

Send for Free sample and particulars.

Punch and pliers for inserting

Also Stocked or Manufactured: Tattoo Outfits; Burdizzo Castrators; Brands; Docking Irons; Ram Clamps; Bull Nose Punches etc., etc.,

THE FARM-ACY
(A. E. FOSTER, Proprietor)
23 MORRIS STREET,
PALMERSTON NORTH.
Phone 6081 - - Phone 6081

Good Farm Shelter Pays Good Dividends

Planning Ahead Will Avoid Costly Mistakes

— By —
P. S. SYME, Instructor in Agriculture, Warkworth.

Good farm shelter is a necessity rather than a luxury, as is shown by the fact that close attention has been paid to this point on practically every farm in New Zealand which shows an outstanding herd average. Best results are obtained if the provision of shelter is planned ahead, and useful suggestions are contained in this article, which will be continued in the September issue.

AS a dairying country New Zealand has undoubtedly been favoured by climate beyond all of her competitors. Even here, however, the sun does not always shine, and although the climate might fairly be described as mild and equable throughout the year, a small country set as a speck in the surrounding ocean must frequently experience stormy winds. These, particularly in exposed districts, are apt to be persistent, and can at times be very cold and wet. Even in the most favoured districts, good shelter may rightly be regarded as a necessity rather than a luxury, and any money or labour wisely invested in the provision of shelter can confidently be expected to pay very handsome dividends.

While it is admittedly difficult to assess the value of shelter in actual figures, experience and common-sense alike suggest that the value must certainly be high, and the fact that close attention has been paid to farm shelter on practically every farm in New Zealand which shows an outstanding herd average is not without significance. As an animal normally maintains its body temperature by the consumption of food, it is evident that exposture to severe cold must necessitate extra feeding, or the animal must consume its own fat. Proper shelter is cheaper than either of these alternatives.

Work Should Be Planned Ahead

The provision of adequate shelter frequently demands much careful thought, and the best results cannot be expected from spasmodic and haphazard plantings. To achieve complete success, the work should be planned well ahead, considering the layout of the farm as a whole as well as the needs of individual fields. By working to a programme and spreading the plantings over several years, the work can be methodically performed, the most suitable species can be selected, and costly mistakes can be avoided.

Fig. 1.—Cup. macrocarpa makes quite an effective "quick shelter" during the early stages of growth. If intended to provide timber it should not be planted on shallow or water-logged ground, as the large trees require an extensive and deep root system to withstand wind pressure.

DELAYS *are* DANGEROUS
EFFECT That POLICY
with the
GOVERNMENT LIFE
TO-DAY

The fool buys his experience. The wise man gets the fool's experience for nothing and profits accordingly. Considerable loss and disappointment are the inevitable results of planting unsuitable species, and every possible care should be taken in advance to ascertain, both by personal observation and inquiry, whether or not any species selected is likely to thrive under local conditions.

If a programme is carefully designed in advance the various operations of preparing the ground and planting can be carried out systematically, each at the proper time, while considerable economies can also be effected, as the farmer is enabled to raise his own plants in succession ready for planting out as required.

Types of Shelter

In designing the plan to be followed, consideration is usually given to two distinct types of shelter—high breakwinds to protect the farm against the worst prevailing winds, and a series of low, dense hedges to provide shelter for individual fields. In addition, the possibility of utilising any waste ground to provide for future needs of home-grown timber should be taken into account.

Whether or not high windbreaks are necessary depends largely on local conditions, the degree of exposure, and the severity of the prevailing winds. If properly designed, such a windbreak will provide shelter for considerable distances. Experiments have shown that a shelter belt 66 ft. high will afford protection for about five chains and partial protection for about fifteen chains.

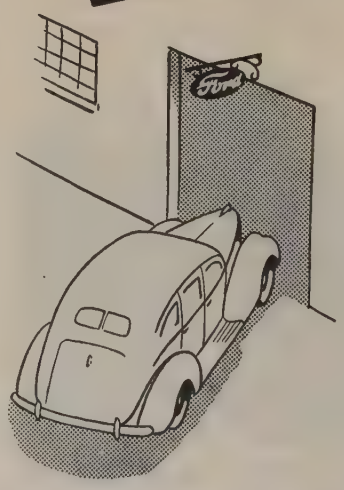
The direction of such shelter belts should generally be from north to south, as this gives protection from the most prevalent winds, and at the same time does not result in excessive shading during the winter. With a 60 ft. shelter belt running north and south, the eastern paddocks are in full sun from sunrise until 12.58 p.m., and western paddocks from 11.20 a.m. until sunset. With an 80 ft. shelter belt running east and west, a shadow 136 ft. long will be cast even at midday in North Auckland, and in Southland the corresponding shadow will extend as far as 200 ft. into the field.

This aspect is sometimes unfortunately overlooked, particularly when providing tall shelter around the dwelling house, and is apt to be realised only too late.

FORD OWNERS

It is essential that you get the Best Performance and Maximum Economy from your Car Today!

Drive in for the SPECIALISED FORD TUNE-UP



Even good performance is not enough to-day . . you've got to get the *very best* from your car or truck. Sweet running, maximum economy and the certain knowledge that every mechanical part is in first class condition. And that's what Ford Dealers are offering you with their ECONOMY ENGINE TUNE-UP. This new, *Specialised* Service covers 26 important operations and includes an accurate and scientific check-over of every important part in your car. You'll be amazed at the difference it makes; you'll be delighted with the petrol mileage you'll get.

Ford Dealers have special low rates for the Economy Engine Tune-Up. Remember, too, this service is recommended by the manufacturers of your car. . . Drive in to-day.

FORD MOTOR COMPANY OF NEW ZEALAND LTD. LOWER HUTT WELLINGTON
F.P. 203

Important Factors

In providing for high windbreaks, the severity of the winds and the proximity to the sea will to some extent determine the size and thickness of the shelter belts as well as the species which can be safely planted. The size of the farm, the value of the land, and the labour available for planting operations and the subsequent upkeep are also important considerations.

Although trees for tall shelter are sometimes planted in single lines, in practice this method does not usually prove very successful. If the timber itself is to have any real value the trees must be planted close. When planted in single lines, blanks occur through trees dying, and in any event the trees themselves tend to open out at the base, with the result that the draught of wind is colder under the trees than in an open paddock. If high shelter is essential, and if circumstances permit, such shelter belts should preferably be not less than about half a chain wide, and may with advantage be one chain wide or more.

The following are suggested as likely to be suitable for varying conditions.

(1) FOR COASTAL DISTRICTS

Where the locality is exposed to very severe and constant winds, as on parts of the West Coast, some difficulty may be experienced in establishing shelter breaks, and it may be necessary to provide first an artificial windbreak of tea tree scrub and to plant natives, such as *Veronica elliptica, Pittosporum crassifolium,* and flax, on the lee of this. Once these have established, a belt of ground may be prepared on the lee side and planted somewhat as follows:—

One or two rows of *Pinus pinaster* fronting the seaward side spaced 4 ft. each way.

One or two rows of *Pinus pinaster* or *P. densiflora* or *P. muricata* spaced 4 ft. each way.

A few rows of *P. radiata* spaced 6 ft. each way.

One row of *Cupressus macrocarpa* 5 ft. apart and about 20 ft. from the pines.

If the soil is sandy and if there is a possible danger of serious wind erosion the young trees are best planted direct without preparatory cultivation, but if no such danger exists preparatory cultivation may be highly advantageous in assisting growth.

Pinus pinaster, P. muricata, and *P. densiflora* succeed on very poor sandy soils, and are well adapted—*P. pinaster* in particular—to withstand saline winds. *Pinus radiata* and *Cup. macrocarpa* do not withstand saline winds quite so well, but they will succeed on poor, sandy soils, and will provide more valuable timber.

Fig. 3.—Black wattle was at one time very commonly used in mixed shelter belts, but because of the risk of attack by gall fungus its use is no longer to be recommended.

(2) IN INLAND DISTRICTS.

Where winds are not laden with salt and are less severe, a narrower belt may be quite effective. It will usually be found that as a nurse tree *P. radiata* grows too quickly, and is very apt to overcrowd and kill slower-growing permanent trees. For this reason *P. muricata* is frequently to be preferred, as it allows other trees to grow close to it and is itself very free from diseases and pests.

The following makes an excellent shelter belt:—

Fig. 2.—Trees planted in single lines for permanent tall shelter are seldom satisfactory. Owing to branches dying back at the base, ground draughts are more severe near the shelter than in the open paddock.

HEDGE SHELTER and TIMBER TREES

All Grown on High Exposed Country

Now is the Time to Plant!

	per 1,000
Barberry Common ..	from 37/6 to 85/-
Barberry Seedless	from £9 to £12
Boxthorn	from 22/6 to 27/6
Prickly Acacia	from 50/- to 75/-
	per 100
Pinus Insignis	from 15/- to 27/6
Pinus Muricata	from 15/- to 27/6
Macrocarpa	from 25/- to 50/-
Ornamental Hedge Plants	from 30/- to 40/-
Lawsoniania	from 35/- to 75/-
Eucalyptus	from 10/6 to 20/-
	each
Ornamental Shrubs	from 2/- to 3/6
Fruit Trees, *Selected 2 yr.*	from 30/- to 36/-
	doz.
Citrus Trees	from 4/- to 6/- each

WE OFFER 1 yr., 2 yr., and 3 yr. TREES

SEND FOR OUR CATALOGUE

Duncan & Davies Ltd.

Nurserymen, NEW PLYMOUTH

Telephone: Office, 465. P.O. Box 129

After hours, 1426

One or two rows of Corsican pine 4 ft. apart on windward side.

One or two rows of *P. muricata* 4 ft. apart.

One row of *Cup. lawsoniana* or *Cup. Benthamii* spaced 3 ft. apart and about 20 ft. from the pines.

Lombardy Poplars

Where wide shelter belts are impracticable because of the high cost or for any other reason, effective shelter may be provided by planting a double row of lombardy poplars, allowing about 4 ft. between the rows, with the trees spaced about 2½ ft. apart. Two rows of *eleagnus japonica* are then planted between the rows of poplars, spacing the plants at about 30 in. and allowing 12 in. between the two rows. Given proper support, the *Eleagnus* will climb to a considerable height, and will require little attention. An alternative to this method is to plant the lombardy poplars in three rows, these being alternately cut back as required to provide bottom shelter.

When planting under favourable conditions, cuttings up to 7 ft. long may be used. They should not be driven into the ground, as the bottom bark is then torn off and a poor strike may result. The best method is to use a crowbar to make the hole, and to place the cutting in this with the butt resting firmly on the bottom, taking care to tramp the soil so as to provide a good contact and a firm support.

On grounds of economy this poplar has much to recommend it, as it is easily started from cuttings, particularly if the soil is fairly moist but not water-logged. The silver poplar should not be used because of its suckering habit.

Eucalypts

Eucalypts are sometimes planted alone for shelter belts, but they tend to become bare below and allow light to enter freely, so that weed growth is encouraged. Good shelter belts may be formed by planting several rows of eucalypts suited to local conditions with two or more rows of pines or cypresses on each side.

Apart from actual shelter belts, excellent results can be obtained by planting blocks of trees in selected corners so that each block will provide shelter for a number of fields. For this purpose *Pinus muricata* and *Cup. lawsoniana* are probably the most suitable trees, but if the object is to provide useful timber as well, suitable eucalypts may also be included.

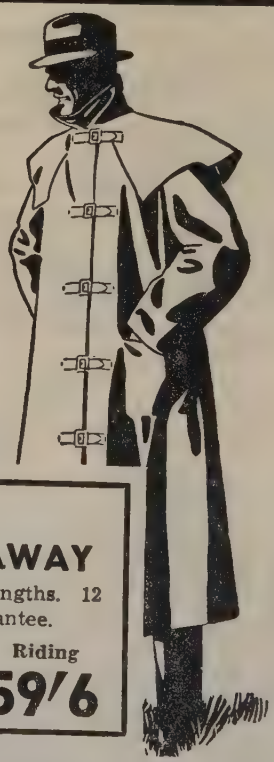
If it is intended to plant eucalypts, particular attention should be paid to see that the varieties selected are such as will suit the district and will ultimately provide some useful timber. It should be remembered that in this respect climate is of prime importance, whereas soil, provided it will supply plenty of moisture, need not be of very high fertility. Many species of eucalypts are susceptible to salt winds and do not readily succeed on exposed positions in coastal districts.

Planting for Farm Timber

Where the main object is to utilise waste ground for useful farm timber, *Pinus radiata* and *Cup. macrocarpa* can be safely recommended over a wide range of soil and climatic conditions. It is very important to remember, however, that these, particularly the *macrocarpa*, will eventually grow to a considerable size, and on this account require a good, deep soil to provide adequate root hold. If planted on low-lying ground where the water table is not far from the surface, *macrocarpa* will grow well as a young tree, but as the roots will not penetrate below the water level, the trees are very liable to blow over when they get larger.

On wet soils, eucalypts are probably to be preferred, and such species as *E. robusta* will succeed even on relatively wet ground. Black wattle was at one time widely grown in mixed shelter, but its use cannot now be recommended, as it is very liable to attack by the gall fungus.

(To be continued.)

HALLENSTEIN BROS. HB NEW ZEALAND
OILY CANVAS COATS
GUARANTEED
The Ideal Storm Coat for Winter Wear The special features include H.B.'s guarantee with each coat, which covers any justifiable complaint. These coats are made from first-grade Scottish materials.

The ELK
48in to 58in lengths. 6 months' guarantee.
Walking 34/6 Riding 37/6
The STORMAWAY
48in to 58in lengths. 12 months' guarantee.
Walking 55/- Riding 59/6
There are 29 H.B. Men's Wear Stores from Whangarei in the North to Invercargill in the South.
Hallensteins
15540

Oat Varieties In Southland

— By —
W. L. HARBORD, Fields Instructor, Invercargill.

SEVERAL varieties of oats are grown in Southland today, but the variety holding pride of place with farmers—and it has done so for years now—is the oat "Gartons Abundance."

This oat, which can always be relied upon to give a heavy yield of good grain, appears to have developed a bad fault during the last few seasons. Always a variety known to lodge according to circumstances, it has evidently developed a greater susceptibility, so much so that the Southland farmer is now looking towards new varieties to supply his oat crops. On average soil in Southland "Gartons Abundance" will lodge very heavily, some crops being completely flat. Such crops are always a serious worry to the farmer, as they demand greater expense, labour, and time for the harvest, and frequently the samples of grain consist of much second-grade seed.

A Heavy Cropper

Another Gartons variety which has come into favour is "Onward." This oat, the result of a cross between two of Gartons previously heavy yielders, "Marvellous" and "Superb," has proved itself a very heavy cropping variety under Southland conditions. A white oat, not unlike "Marvellous" in appearance and having a compact head, the "Onward" derives two of its important characteristics — earliness and quality of grain—from its parent "Superb." A heavy yielding oat with a plump grain, "Onward" has a very strong straw, which reduces considerably any susceptibility to lodging, an important point in Southland-grown oat crops. In fact, so strong and coarse is the straw of this variety that it is not a suitable crop for chaff because of the rank growth of coarse straw.

Being very thick at the base, the straw tapers towards the head, and although last season was particularly severe in the lodging of crops, nearly all crops of this variety stood the test. In one or two isolated districts "Onward" crops did lodge, but it was noticed that these crops were all on very heavy land producing heavy growth and yield.

Because of its coarse straw it is doubtful whether "Onward" will hold favour for long as a chaff oat, and it should be confined mainly to grain crops in this province.

For Chaff

For chaff the farmer of Southland could grow little better than "Resistance" oats. Because of the uneven nature of the sample of grain produced this variety finds no favour with the millers, and consequently only a small total acreage has been grown during the past two seasons. Although not quite such a heavy yielder as either "Abundance" or "Onward," "Resistance" can still be classed among the heavy croppers, for a yield of 100 bushels is by no means beyond its capacity of producton on good soil. The straw is always finely textured, and is of medium length. Its straw is distinct from that of both "Abundance" and "Onward," and is shorter. However, in spite of its thin straw and high yielding capacity, "Resistance" is the least susceptible to lodging of any of the more common varieties of oats grown.

In an oat variety trial grown on the Winton Experimental Farm "Resistance," in spite of a very heavy yield, was the only variety to remain standing. Another good point to be considered is the head of well-held grain. Seldom does this oat shed its seed before harvest—a point decidedly in its favour when compared with either "Abundance" or "Onward."

As a chaff oat this variety must certainly gain in favour, for it has those splendid characteristics which allow a first-class quality chaff, reduce the risk of involved harvesting operations, and reduce the risk of having the grain shaken.

"Dun" Variety

The "Dun" oat, a dark-grained variety, is famous for its chaff, which is greatly favoured by racehorse owners. It should always be sown in the autumn and grazed during the late winter and spring. The grazing causes an increased tillering of the plants, which subsequently ensures a heavier yield.

Grazing should be gauged according to the growth of the crop and not on

HESKETT SLAG

Watch your stock for Nature's advice. It's easily judged if you leave the gate open into a paddock dressed with HESKETT SLAG. They'll show you which they prefer!

Packed 18 to the ton.
F.O.R., HUNTLY, WAIKATO.
Obtainable all merchants and Dairy Cos. or from the

A chemical and physical combination known as Calcium-Silico-Phosphate, which has the power of unlocking dormant minerals from the soil. It contains *soluble* — phosphate, lime, silicon, cobalt, iodine, magnesium. iron, etc.

Made in N.Z. for N.Z. Soils

Distributors for New Zealand:
ARTHUR YATES & CO., LTD.
Whangarei :: AUCKLAND :: New Plymouth

the feed required. The "Dun" oat frequently becomes lodged, especially on the heavier class of Southland soils, and the seed is also very easily shaken from the head. These two faults, common to this variety, make the "Dun" oat crop difficult to harvest without loss. It is another heavy yielding variety when given good soil and conditions, and some very excellent crops have been grown in this province.

Losing Favour

The "Huskless" oat appears to be losing favour rapidly after a short period of some doubtful popularity with farmers. With no husk in the head, this variety shakes easily and is most severely attacked by birds, especially if it is an early crop. It also lodges easily.

If the crop has not been carefully and properly harvested, seed oats obtained from this variety often fail to germinate when sown. In cases where the crop has been threshed out of the stook and not completely seasoned it has been noticed that the seed will heat and run together, and that weevils and mites attack heavily, with the result that germination is killed. "Huskless" oats should be harvested with extra care, and should be left in stack for up to two months before threshing.

When buying a line of "Huskless" oats for seed one should know when and under what conditions the line was harvested, and it should then be treated with mercurial dust to prevent mite and weevil damage.

Contagious Abortion

CONTAGIOUS abortion is still prevalent in many dairy herds, states the annual report of the Director of the Livestock Division. The application of the agglutination test to blood samples taken from individual herds gives a true incidence of the disease in these herds. The main trouble in many cases appears to be confined to the young two-year-old heifers, where at times the rate of abortion is very high. Several apparent epidemics affecting this age group have been noted during the year. In each case advice has been given in regard to the nature of the disease, and methods of control have been recommended.

In the older age group of animals, owners, as a rule, do not give sufficient attention to the isolation of aborting animals, and thus a fresh source of infection for the young stock is spread about. Strict attention to isolation and disinfection of all aborting animals must be enforced if a comparative immunity from storms of the disease is to be ensured.

EVERY LAMB LOST IS A LOSS TO BRITAIN

. . . AND A BIG LOSS TO YOU!

ELIMINATE YOUR LOSSES, AND GET YOUR FAT LAMBS AWAY MORE QUICKLY!

INVEST NOW IN A

"MOWAT" CASTRATOR AND TAILER

The Finest, Safest and Speediest Instrument for the job on the market.

Definitely Prevents Bleeding, Mis-mothering, Arthritis, and all other After-tailing Troubles.

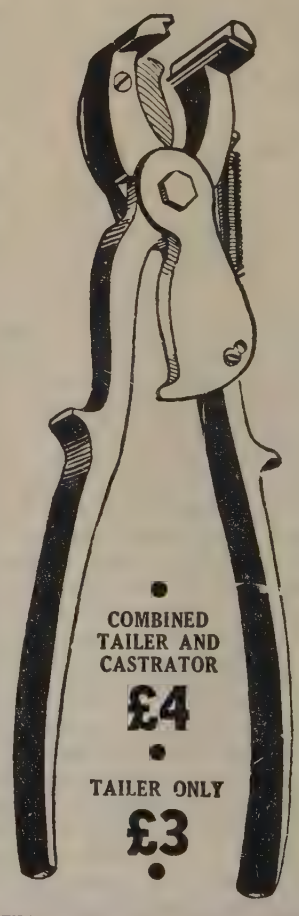
Here are typical extracts from scores of testimonials sent in by practical N.Z. farmers.

"NOT ONE REJECTED LAMB IN FOUR SEASONS." . . . Mr. McDonald, North Canterbury Freezing Co., states: "During above period I have drafted lambs castrated and tailed with a 'Mowat.' . . . No rejections owing to arthritis or other complaints. . . . Lambs well grown and healthy in every way."

"NO KNIFE REQUIRED." . . . "I used the 'Mowat' on all my lambs last year, and shall never go back to the knife again," writes Mr. J. W. Kelly, Lower Kokotahi. "My fat lambs are better than ever before."

"1500 LAMBS TAILED SUCCESSFULLY WITH A MOWAT," . . . Says Mr. W. W. Reddecliffe, Hororata: "I found the 'Mowat' all you claimed it to be. It stops fully 90 per cent. of bleeding."

"NO TROUBLE WITH ARTHRITIS WHEN THE 'MOWAT' IS ON THE JOB." . . . Writes Mr. C. P. Strachan, Ngatimoto: . . . "I have had absolute success with the 'Mowat,' and the lambs have gone away fat much earlier than before."



COMBINED TAILER AND CASTRATOR £4

TAILER ONLY £3

SEND FOR FREE ILLUSTRATED DESCRIPTIVE "MOWAT" BOOKLET TO—

North Island, Nelson & Marlborough Agents:
PREMIER PRODUCTS LTD.
HUDDART PARKER BLDG., WELLINGTON

Canterbury, Otago and Southland Agents:
ANDREWS & BEAVEN LTD.
359 MOOREHOUSE AVE, CHRISTCHURCH

Pig Production Must Progress

Essential Factors in Rearing Healthy Animals For Great Britain

— By —
C. V. DAYUS,
District Superintendent,
Livestock Division, Dunedin.

PIG production in New Zealand has fallen off in the last two years, associated with a downward trend in the production of dairy produce. Now is the time to arrest this downward trend and to convert it into an expansion of baconer production. Apart from it being a profitable undertaking, it is the duty of everyone who can do so to increase pig production.

The pig is the most prolific breeder on the farm, and comes to commercial maturity within a relatively short period. A comparatively small area of land is required for development, and the pig does just as well on the large farm, small holding, and individual rural home.

Imports into Britain

In 1938 no less than 498,600 tons of pig-meat were imported into Great Britain and Northern Ireland, in addition to home production. In this huge amount the principal items were:—

	Tons.	
Denmark	169,500	bacon
Canada	63,800	„
Irish Free State .	26,800	„
Poland	22,800	„
Other foreign countries	38,500	„
U.S.A.	19,800	hams
New Zealand	28,900	frozen pork
Argentine	11,900	„ „
Other British countries	14,600	„ „

It will be appreciated from these figures how much pig-meat Great Britain has lost through the war and the invasion of Denmark, Holland, and Poland. It will also be realised that New Zealand supplied a very small amount—only 5.79 per cent.

Farmers are responding wholeheartedly to the call for increased pig production, but there are a number of essential points which must not be lost sight of in attaining this objective. These factors, which include such items as breeding, housing and nutrition, are discussed in this article.

New Zealand is the greatest exporter of dairy produce in the world, yet her pig production was less than one-third of the pig production of Denmark, and less than one-half that of Holland.

Bridging the Gap

There were 4,500,000 pigs in Great Britain in June, 1939, and it was estimated that if one out of every five rural allotment holders and rural householders fattened only one pig each an additional half a million pigs would be produced each year.

The British producer, however, cannot hope to make up any appreciable amount of the deficiency because of the difficulty in the supply of pig feed. He has no cheap dairy by-products to utilise, as has New Zealand; he has to rely largely on cereal food, much of which has to be imported. Under war conditions, however, imported cereal food is more valuable as human food. It must be remembered that it takes

Sweeter Soil— Sweeter Profits

Jensen's Mole Drain Plough

Designed by a Farmer for Farmers

It has the Lightest Draught, is the easiest to handle, and for Efficiency has no equal on the market. It can be used with either Horses or Tractor.

WRITE FOR FULL PARTICULARS

Sole Manufacturers and Distributors:

REID & GRAY AGENCY CO. LTD.

171 RANGITIKEI STREET, PALMERSTON NORTH

about 6lb. of cereal grain to produce 1lb. of pig-meat, but 1lb. of pig-meat in human nutrition will not go as far as 1lb. of grain, still less 6lb.

Bacon Pigs Required

Practically two-thirds of the pigs produced in Great Britain go into the pork trade, and in the past there were often insufficient pigs to supply this trade. Porker pigs call for less organisation than baconers, and pork production is the easy, less-responsible way of using dairy by-products. Bacon pays as well, and is a more stabilised form of production.

If New Zealand is to make the best contribution to the national effort in the production of pig-meat, it is a supply of bacon pigs that is required, because it is undoubtedly the bacon market and not the pork market in which there is practically unlimited opportunity for expansion.

A policy of bacon production could lay the foundation for a larger share of the trade after the war. If the uniformity and the quality of pig carcasses is improved—and this is being done as a result of grading by the elimination of poor types of boars and sows, and by selective breeding and proper feeding—there is no reason why New Zealand should not permanently expand her market.

Breeding

As the main present demand and future potentialities are in the bacon market, the first essential is to breed pigs of the right type and then finish them off uniformly and to correct weights. Much of the Danish success is due to the uniformity of their carcasses, induced largely by simplicity in breeding and feeding.

The bacon curer likes a pig with **length**, having a good top and underline, light in the shoulder, collar, jowl and head, and having a well-filled ham meaty down to the hock and which, on slaughter, will give a good proportion of lean to fat. This formulates a good general ideal, but in the production of the long, lean pig care must be exercised that this development is not at the expense of constitution. While it is desirable to develop pigs fine in the shoulder, they must not be too fine for fear of restricting chest room, etc.

A study of the returns from the carcass quality evaluation scheme in New Zealand is interesting. Of the 686 entries in the pig classes, pigs sired by Tamworth, Berkshire, and Large White boars are in comparable numbers and score equally well on the points of length, shoulder fat, loin fat, and rate of growth. Most breeds are capable of producing either bacon or pork, and a good bacon pig will generally produce reasonably good pork.

Producing the Desired Type

Whatever the breed selected, it is better, where possible, for the feeder to breed his own stock; by this means the desired type can be produced and the risk of disease lowered. There are too many mongrel pigs raised in New Zealand, which is not conducive to

AGAINST HARD QUARTERS AND UDDER TROUBLES

The urgent call for increased production makes the health of your herds doubly essential. It is a duty of every farmer to watch for and instantly check the havoc of Mammitis. Assist in doing this by prompt drenching . . . here is the testimony of some of many satisfied users of Q.E.D.

A FEW OF HUNDREDS OF TESTIMONIALS

. . . I am very pleased to say that I have not had any return of hard quarter and no weakness in any of the cows previously treated.—C.C.H., Stratford.

. . . I have been using your Q.E.D. Mammitis Drenches for two seasons. I am very pleased to be able to tell you that I have had very satisfactory results. —E.J.T., Wanganui.

. . . I have been using your Q.E.D. Drenches consistently this season and have been getting good results. I am now on the 9th dozen.—J. A. B., Morrinsville.

PRICE: 25/- per Packet, 12 Doses.

Brown's Quick Quite Ease Easily Drench Done

BROWN'S MAMMITIS DRENCH

Stocks from: Newton King Ltd., all Branches; N.Z. Co-op. Pig Marketing Association or Agents. Other Stockists: Wright Stephenson & Co. Ltd.; Abraham & Williams Ltd.; Hodder & Tolley Ltd.; Farmers' Co-op. Distributors Ltd.; N.Z. Loan & Mercantile Agency Co. Ltd.; The Abraham Seed Co.; Farmers' Co-op. Org. Ltd., Taranaki, and Branches.

uniformity in the carcasses. The supply of bacon pigs should be maintained by purebreds and the first or second cross. The strain and the type are also most important.

The influence of breeding on carcass quality cannot be overstressed, but not enough attention is paid to this fact in New Zealand. In emphasising this I might mention that on one farm in England a particular Large White boar was crossed with sows of six different breeds, and there was very little difference in the grading returns from the mixed progeny. On the other hand, the winning pig in the Palmerston North Show for three successive years was from a Berkshire sow on which three different boars were used.

Housing

Contrary to popular opinion, no farm animal is really so clean in its habits as the pig, and probably none suffers so much if obliged to exist in wet, foul, cold surroundings. Good housing is one essential for success in pig production. Favourable conditions of housing with proper lighting and ventilation and efficient drainage, providing a sufficiently warm and equitable temperature, and a warm, dry floor, will be the means of disease prevention and economy in food consumption.

In permanent buildings concrete floors are ideal for cleanliness, but if badly put down they may lead to cramp, enlarged joints, rheumatism, and unthriftiness. To prevent the loss of body heat through the floor it is essential to have a sound layer of insulation between the concrete and the ground. Coke breeze or brick rubble is useful for this purpose. This insulating layer should not be less than 9in. thick, and should be covered with waterproof paper before laying the concrete, which will prevent the cement mixture filling up the air spaces. The concrete layer should not be more than 2in. deep. The sleeping quarters could have a closely-boarded wooden platform, which can be moved for cleaning, laid over the concrete.

In Great Britain last year I had several opportunities of noting the attention that was paid to this insulating layer. A well-made hollow brick was often used, with the concrete layer on top not more than 1in. thick. Another popular method is to lay a 2in. thick cork insulation on a concrete base and cover it with asphalt or bituminous compound.

Efficient drainage is essential, but in whatever system is adopted in permanent houses each pen should be drained separately into a common channel. In no case should a channel run through several pens in turn, as this is a likely means of spreading disease.

The actual type of housing is more a matter for the individual pig producer, but there are many quite efficient designs available. The Department of Agriculture has just published a new Bulletin, No. 117, "Lay-out and Construction of Modern Piggeries."

Nutrition

The pig is the most economic manufacturer of meat. It gains 1lb. liveweight with less food than any other farm animal, and requires about 4lb. of dry matter to provide that increase, whereas cattle, for example, require from 10 to 12lb.

Nutrition has an important bearing on the maintenance of health. In feeding breeding stock the main point is to keep them in good breeding condition—healthy, active, and fit—without allowing them to become too fat. Breeding sows must be given plenty of fresh air, sunlight, and exercise if they are to be kept healthy and able to produce strong and virile litters.

Heavy milk yield by the sow is of fundamental importance, because if young pigs get a good start on their mothers they are better able to resist disease and withstand the check at

PUT AN END TO PRIMITIVE METHODS—
Get Gallons of
BOILING WATER
THIS QUICK MODERN WAY
With a SPEEDWAY Steam Steriliser you can raise a full head of steam in under 15 minutes, plus unlimited gallons of boiling water.
SECURE FULL DETAILS

Enquire from your Agent or send for leaflet.

SPEEDWAY

OIL (OR WOOD) BURNING STERILISERS,
SPEEDWAY STEAM PRODUCTS LTD.,
51 Albert Street, Auckland.
South Island Distributors:
A. H. Turnbull & Co. Ltd., Christchurch.

FEEL TIRED IN THE MORNINGS?

Feel weary when you wake up?
Shaky on your feet when you struggle out of bed?
Eyes heavy, limbs heavy, mind heavy?
It's probably constipation.
You may be "regular," yet expel *incompletely*. Poisons are left. Contaminate the blood. Slow you down. Sap your vigour.

For this condition there is a simple prescription. Doctors have been repeating it for years. It is Kruschen Salts. Food fads come and go. Fashions in diet have their day and are forgotten. But Kruschen Salts remain unquestioned. They don't drug you. They don't scour you. There is nothing secret about them. The analysis is on every bottle. And doctors recognise this analysis as a basic prescription for a basic disorder.

YOU'LL FEEL ALL THE BETTER FOR A PINCH OF

KRUSCHEN

Take Kruschen in tea or hot water.
2/5 *a bottle at Chemists and Stores.*

F 740

weaning. The sow must not be overfed for the first few days after farrowing, and her food should be easily digestible; otherwise, milk production will be interfered with, and that abnormal condition may be induced which results in the sow "savaging" her pigs.

Green Stuff In the Diet

Sows which are farrowed in pens and not allowed to run on pasture when suckling their pigs often secrete milk with a very low iron content, with the result that the young pigs become anaemic. The onset of infectious diseases can often be traced to a time of lowered resistance, and nothing leaves the young animal more prone to infection than anaemia. This nutritional anaemia of sucking pigs is characterised by persistent scouring and rapid wasting, ending in death from exhaustion in a few days. Access to pasture or the provision of some earthy material will generally relieve the condition; alternatively, the affected piglets must be dosed daily with ½ to 1 teaspoonful of Parrishes Food.

It is therefore wise to give all pigs a daily allowance of green stuff of some kind, for this plays an important part in maintaining health.

There is no economy in undernourishing young piglets; they should be encouraged to eat at the earliest possible age. A considerable gain will result if this can be induced before they are three weeks old. The food thus given by means of creeps to little pigs while they are suckling the sow will show the greatest return of any food fed throughout the life of the pig, and will do much to prevent that check at weaning which has such a detrimental effect on growth, carcass quality, and disease resistance.

Mixture for Creep Feeding

A simple and satisfactory feed mixture for creep feeding is meat-meal and barley, half and half. Some prefer a mixture of 4 parts of barley-meal, 4 parts of pollard, and 1 part of high-grade meat-meal. Allow the piglets as much as they will clean up twice a day, and in addition allow them access to some green food.

The simplest method of giving green food is to let the little pigs run out at grass with the sows for a while each day, or, if such arrangement is not possible, feed some green stuff such as cabbages, kale, or rape, etc.

The piglets should not be weaned until they are eight weeks old, and should be fed on the best of feed until they are three to four months old. It is well to remember that the value of a pig is largely determined by the first three months of its life, and therefore the ability to turn out healthy pigs of good weight and development at weaning and until the pig is 70lb. weight is fundamental to success.

Cod Liver Oil

It is now general practice to give cod liver oil to pigs, but on economical grounds this oil should be used with care. It is a mistake to have the oil ration too high, as it tends to produce soft fat, and, if fed too near to slaughter, it may taint the produce. Only high-grade oil should be used, as losses have been reported in the United States of America due to the unsaponified portion of low-grade oil.

FOR RESULTS THAT COUNT—Why are more and more progressive farmers each year changing to the G.V.B.? It's because their friends have given them such glowing reports, and told them of the amazing results they have obtained.
The G.V.B. means increased production, superfine grading, speed and efficiency, and less udder troubles.

BUT YOU DON'T HAVE TO TAKE OUR WORD FOR IT—
Read what Mr. J. J. Walton, of Te Kawa, says on the 16/7/40: "As you are aware, I am just starting the fourth season with the G.V.B. milker and am pleased to say that I have not lost one cow's quarter since using your machine. I make a point of telling my friends that I consider the G.V.B. the best cure for udder troubles that I know of."
Write today for our fully illustrated Catalogue showing the advantages of the G.V.B.

THE GORDON VACUUM BREAK MILKERS LTD.,
Head Office: ALBERT STREET, AUCKLAND.
P.O. BOX 1687.
Branches at Whangarei, Palmerston North, Hamilton, Stratford and Christchurch.

THIS COUPON BRINGS CATALOGUE FREE!

To GORDON VACUUM BREAK MILKERS LTD., P.O. Box 1687, AUCKLAND.
Please send me your fully illustrated Catalogue.
NAME .....
ADDRESS .....
.....
My herd comprises ..... cows. J.A.

The cheapest and easiest material to use as a source of Vitamin A and D is grass or other green food. Cod liver oil is, however, an excellent supplementary source for the supply of these vitamins. Vitamin A is the anti-infective and growth-promoting vitamin. Pigs kept with a deficient supply of this vitamin sooner or later develop paralysis of the hindquarters or convulsive fits, head held on one side, and stunted growth, etc.

Because of its Vitamin A content the cod liver oil helps to protect the young pig from colds and lung affections. Vitamin D, the other vitamin in cod liver oil, prevents rickets if an adequate calcium-phosphorus intake is available in the diet. Half an ounce of cod liver oil per pig per day before weaning, increased to one ounce daily for at least two months after weaning, will be sufficient. Cod liver oil is particularly valuable in the ration of young growing pigs in the winter. The oil may be incorporated in the food of the sow in the case of suckling pigs so that they derive the benefit through her milk.

Rate of Feeding

In the early stages of fattening the pigs should be given as much as they will clean up at a meal; that is, what they can clean up in a reasonable time, say, 20 minutes after being fed. Nothing is more likely to upset pigs than food left in the troughs to go stale; and overfeeding, apart from its bad effects on pigs, is wasteful.

In the later stages of fattening the food should be limited rather below appetite requirements; otherwise carcass quality is likely to be affected. All changes of food, both in quantity and composition, should be carried out gradually.

As pigs are the most rapid growing of farm animals, the supply of mineral matter is of some importance. A good mineral mixture is made by mixing:—

	lb.
Ground limestone	25
Steamer bone-meal or super	25
Common salt	5
Phosphate of iron	0½

Have a tin of this mixture beside the sty, and put half a pound in the trough daily for eight pigs (a baking powder tin is a useful measure). A teaspoonful of this mixture may be incorporated in the food of young pigs daily, working up to one tablespoonful for adult pigs.

Maintenance Of Health

The greatest mortality in pigs in New Zealand takes place at birth, during the suckling period, and in the immediate post-weaning period. The influence of housing and nutrition on the maintenance of health has already been indicated, but there are two other important factors which should be stressed.

The first is overcrowding, for the extent of an outbreak of contagious disease—piglet pneumonia, pleurisy, necrotic enteritis (salmonella suipestifer infection), etc.—is directly related to the opportunities for spreading, and is therefore directly proportional to the density of the pig population. Overcrowding is common, and is induced by such factors as labour, feeding facilities, and the natural desire

HEALTHY STOCK and HEALTHY LAND

ARE ESSENTIAL TO

MAXIMUM PRODUCTION

Feed the Improved "ECLIPSE" Meat Meals

to Pigs, Calves, Dairy Cattle, Sheep and Poultry.

"ECLIPSE" MEAT MEALS are the highest grade Meat Meals manufactured. Guaranteed to contain not less than 70 per cent. and 80 per cent. Protein, they are absolutely Pure Meat Meals, finely ground and easily assimiable.

All Bags Branded with the Minimum Protein Content.

"ECLIPSE" FERTILIZERS keep the land healthy and productive. They contain Blood and Bone and other valuable organic ingredients such as Guano.

"ECLIPSE" MEAT MEALS AND FERTILIZERS are procurable from all Stock and Station Agents, Merchants and Dairy Companies, or direct from the Manufacturers:

The New Zealand Refrigerating Co., Ltd.

Head Office: 159 Hereford St., Christchurch

Works: Islington, Smithfield, Burnside, Picton and Imlay.

Write to us for Particulars and Free Booklet on the Feeding of Meat Meals to Live Stock.

to concentrate the pig population near available food. More attention should be paid in New Zealand to the influence of overcrowding.

Isolation Pens

The second point is the provision of isolation facilities for holding newly-purchased animals, show animals, or sick animals. Pens for this purpose should be removed some distance from the regular pens. It would be an advantage in the prevention of disease if newly-purchased pigs could be isolated for ten days or a fortnight and sick animals isolated from the first indications of malaise until recovery is apparent. These isolation pens must be properly cleaned and disinfected after use.

Progress

Here are eight steps towards progress:—

(1) Provide efficient housing.
(2) Rations economically balanced and supplement
(3) Oil (cod or halibut liver) for Vitamin A and D.
(4) Grass for protein and vitamin supply.
(5) Refrain from overcrowding.
(6) Essential provide isolation facilities and general
(7) Sanitary surroundings safeguard health.
(8) Selected breeding stock.

Contagious ecthynia (sore mouth) continues to give trouble in many flocks from time to time, states the Director of the Livestock Division in his annual report. Owners are strongly advised to vaccinate their sheep against the disease if trouble is being experienced from year to year. The vaccine is very effective in conferring an immunity which lasts several months. It is comparatively easy to carry out, and a demonstration of the method of vaccination may be arranged. The vaccine is supplied from the Animal Research Station, Wallaceville.

Slaughterings of Stock

THE following returns of slaughterings of stock at meat-export slaughterhouses and abattoirs for the months of May and June, 1940, have been compiled by the Livestock Division:—

District	Catttle	Calves	Sheep	Of which Ewes were	Lambs	Swine
North Island						
Meat Export Slaughterhouses—						
Auckland	76,639	13,785	50,105	33,251	82,657	59,672
Poverty Bay - Hawkes Bay	37,525	4,644	111,978	48,629	118,780	6,826
Taranaki-Manawatu	47,473	2,840	64,390	40,046	133,226	38,309
Wairarapa-Wellington	22,884	1,771	47,172	26,236	87,735	7,605
Totals	184,521	23,040	273,645	148,162	422,398	112,412
Abattoirs	23,764	7,577	78,478	42,040	7,723	21,629
North Island Totals	208,285	30,617	352,123	190,202	430,121	134,041
South Island						
Meat Export Slaughterhouses—						
Nelson-Marlborough	767	5	26,102	11,979	50,952	2,348
Canterbury	4,026	2,838	209,521	173,108	320,938	5,343
Otago-Southland	5,592	26	155,816	130,881	587,638	1,480
Totals	10,385	2,869	391,439	315,968	959,528	9,171
Abattoirs	10,362	2,488	45,757	22,700	4,450	7,265
South Island Totals	20,747	5,357	437,196	338,668	963,978	16,436
Dominion						
Meat expt. Slaughterhouses	194,906	25,909	665,084	464,130	1,381,926	121,583
Abattoirs	34,126	10,065	124,235	64,740	12,173	28,894
Grand Totals	229,032	35,974	789,319	528,870	1,394,099	150,477
Same Period, 1939— Meat Export Slaughterhouses and Abattoirs	157,309	42,792	507,775	274,931	1,415,167	105,705
Same Period, 1938— Meat Export Slaughterhouses and Abattoirs	124,202	30,660	572,299	350,107	1,245,660	157,207

Slaughterings of Pigs

The 29,613 pigs killed during June were distributed in weight ranges as follows:—

Under 60 lb.	1,066
61-100 lb.	14,114
101-120 lb.	5,150
121-160 lb.	6,128
161-180 lb.	1,155
Over 180 lb.	738
Sundries	1,262

The grading of pork is 87 per cent. primes and 13 per cent. second quality, and of bacon 78 per cent., 16 per cent., and 6 per cent. of prime 1's, prime 2's, and second quality respectively.

In the different weight ranges of baconers the grading is as follows:—

101-120 lb.	89%, 7%, 4% of P1, P2 and seconds.
121-160 lb.	73%, 20%, 7% of P1, P2 and seconds.
161-180 lb.	64%, 28%, 8% of P1, P2 and seconds.

148-ACRE SEASIDE GOING CONCERN FOR £3000. About 25 acres flat land, balance undulating, and house is situated on nice rise overlooking harbour. About 120 acres grass, balance native bush with plenty of fencing material. Will carry 60 cows and dry stock. 5-roomed all-electric bungalow, bathroom, porcelain bath, washhouse, etc. 6-bail cowshed, concrete floor and yard, garage and manure shed. Situated right on the water about 1½ miles off main road; school bus; cream collected; telephone; metal road. PRICE INCLUDES 39 cows and heifers, 6 calves, 2 horses, sow, boar, 3-cow milking plant, separator and dairy utensils, engine, electric motor, ploughs, harrows, etc., etc. About £1500 cash.

176-ACRE GOING CONCERN FOR £3690. Practically all undulating, good quality land, about 25 acres flat. 14 paddocks. 6 acres bush, balance good grass. Six-roomed house, electric lights and electric stove; 6-bail cowshed, concrete floor and yard; barn, manure shed, concrete calf bail, etc. Situated in splendid district, 6 miles from good centre; metal road; school bus; cream collected. Butterfat production last season from about 60 cows, 16,838 lbs. Really good farm and exceptionally good buying as PRICE INCLUDES 65 cows, 27 yearlings, pedigree bull, about 20 pigs, 2 horses, milking plant, good list implements, etc. £1760 cash, balance Govt. mortgage.

486 ACRES, PRICE £2000, £500 DEPOSIT.— Balance State Advances mortgage. Flat to undulating land, about 200 acres grass; mostly sheep-proof fencing in good order. Well watered. About 40 acres light bush with plenty of fencing timber. Farm suitable for dairying or sheep. Fair house of 5 rooms, cowshed, storage shed and stable. 6 miles from good centre, station, etc. Metal road; cream collected. A partly improved farm quoted at exceptionally low price and on very easy terms.

JNO. GREY
1-3 Winstone Bldgs. Queen Street, Auckland.
'PHONES: 43-668 and 45-062. Private: 28-216.
Helensville. Telephone 13. Private, W. R. Bethune, 278.

Irrigating a border.

Establishing A Pasture Under Irrigation

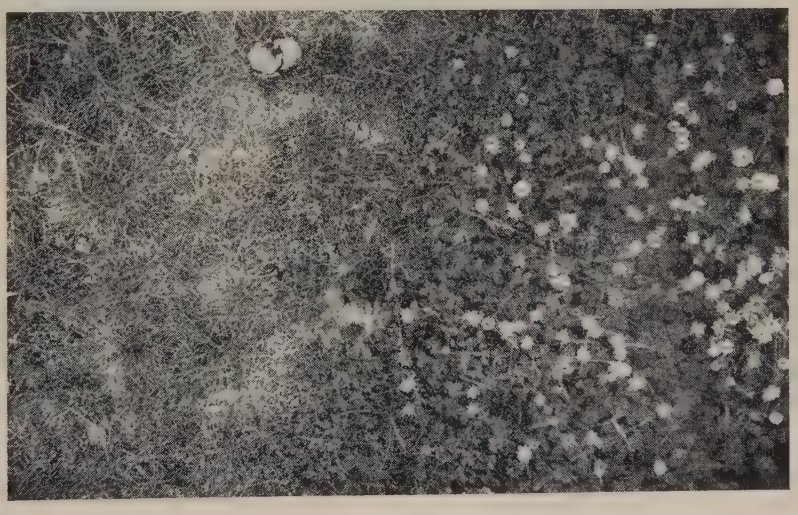
— By —
G. G. CALDER,
Instructor in Agriculture, Alexandra.

Methods of establishing a pasture under irrigation are discussed in this article, and suggested grass seed mixtures are also dealt with.

ON the average Otago-Canterbury mixed farming country two peak periods of grass growth are usually obtained in the year, namely spring and autumn. While we can depend on the spring growth, the autumn growth depends on the rainfall for the season, and a more or less lengthy dry period is experienced in the summer between these two periods of growth.

During the dry summer period pastures become dried up, and supplementary feed crops are grown for carrying stock and fattening lambs. A grass seed mixture suitable for such conditions is composed of a selection of species which will have a chance to survive during the dry period and come away again during the autumn.

Under irrigation at least a six-monthly period (October to March) of steady, high grass production, is obtained, and under these changed conditions grass species should be used which will thrive under moisture conditions. Such species as timothy, *Poa trivialis* and alsyke are of little value under dry summer conditions, but under irrigation these species are valuable because of the amount of good, palatable feed they produce, and are well worth while using in the grass seed mixture to be sown.



Left: Dried up. *Right:* Irrigated, showing response to water.

CHEAPER FIRE INSURANCE!

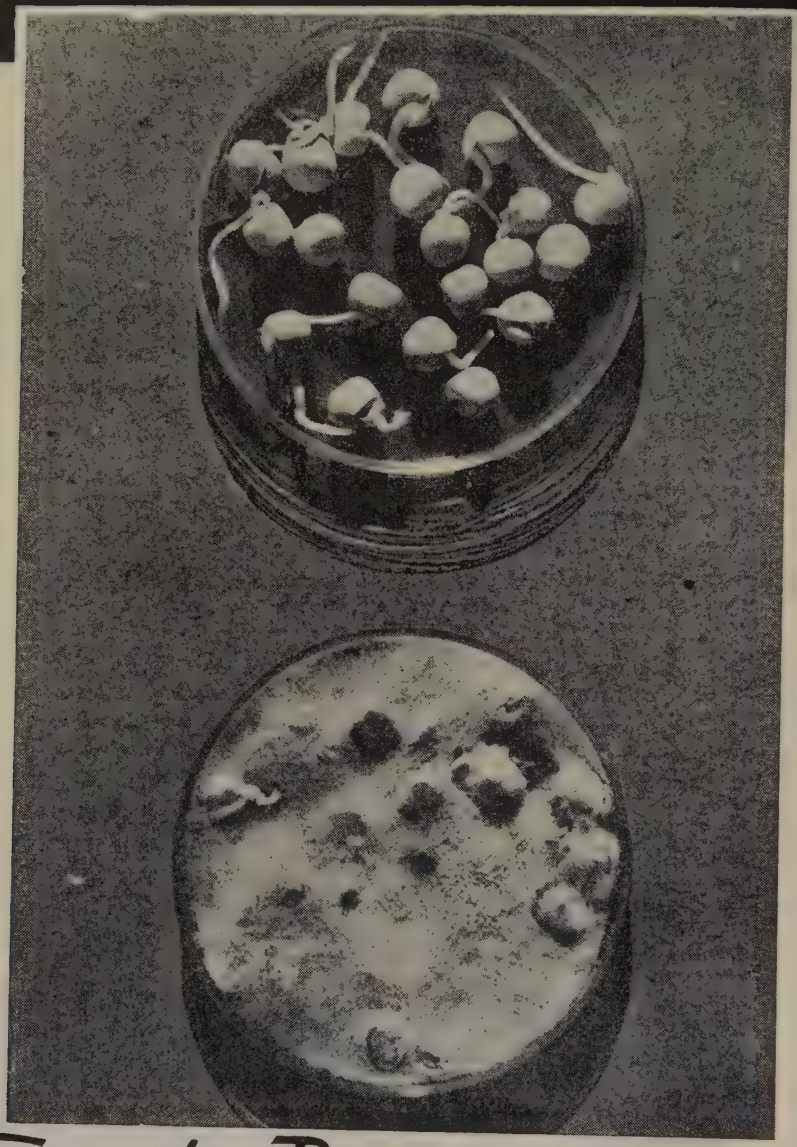
DIVISION OF PROFITS TO FIRE POLICYHOLDERS

Applicable to all policies falling due during twelve months commencing 1st December, 1939.

STATE FIRE INSURANCE OFFICE

Support your own Office.

Protect Your Seed in the Soil



TREATED SEED IS PROTECTED

UNTREATED SEED IS ATTACKED BY FUNGI

Laboratory tests prove the fungicidal value of seed dusts.

AGROSAN·G

Sow the Best by Test

AGROSAN·G

—and Harvest with Satisfaction

Drought Resistance

The main consideration of this mixture is the use of high-producing grasses and clovers which will give the best return without having to worry about their ability to resist drought. This, in turn, considerably reduces the necessity of producing supplementary feed.

Without irrigation, the grass seed mixture consists of roughly, and with variations, something like the following:—

Certified perennial ryegrass, 30lb. per acre.
Certified cocksfoot, 5lb. per acre.
Certified dogstail, 1lb. per acre.
Certified white clover, 2lb. per acre.
Certified red clover, 3lb, per acre.

Under irrigation, timothy can more than take the place of cocksfoot. *Poa trivialis* can substitute for part of the ryegrass, and alsyke can be included. Apart from their permanent nature, the advantages of these two grasses are, briefly:—

(1) Timothy is a more nutritious and palatable grass than cocksfoot, and produces at least the same bulk of feed.

(2) *Poa trivialis* will produce a very dense sward which will fill up any open spaces between the ryegrass and timothy, as well as responding well to irrigation.

Alskye, although not as permanent as timothy and *Poa trivialis*, is valuable in producing a large bulk of feed in the first season and providing a good cover to the land and sheltering the slower-growing and more permanent species which will take up the running as the alskye thins out.

The following is considered a good general mixture for fair land under irrigation:—

Certified perennial ryegrass, 20lb. per acre.
Certified timothy, 5lb. per acre.
Certified *Poa trivialis*, 2lb. per acre.
Certified dogstail, 1lb. per acre.
Certified white clover, 2lb. per acre.
Certified Montgomery red clover, 2lb. per acre.
Certified alsyke, 2lb. per acre.

Sowing

If sufficient natural soil moisture is available for sowing in March, probably no irrigation will be needed until the late spring, by which time natural consolidation of the soil will have taken place by the winter rains. If, however, conditions are too dry in the autumn for a good, even germination of the seed, a preliminary irrigation may be necessary. This will also consolidate the soil, after which the area is lightly cultivated or tine-harrowed, the seed sown, and chain-harrowed or perhaps rolled, depending on the condition of the land.

On land which has been heavily cropped or is inclined to run together extra working may be required to prepare the seed bed. A good seed bed can be obtained on dry stubble land which has been given an irrigation and the surface then worked up.

Sowing in early autumn is always preferable to sowing in spring under irrigation, as a better establishment is obtained and there is less competition from annual weeds.

Experience has shown that to sow first and then irrigate shortly afterwards is not very satisfactory, due to the difficulty in getting the water over the first time. The seed is washed along the surface, or is drawn down too deep into the soil, with subsequent caking of the surface.

Keeping Soil Moist

After the first irrigation in the spring fairly frequent irrigations will be required at least for the first year to maintain sufficient soil moisture to produce a good dense cover to the land. The soil type on which the pasture is growing will affect the number of

(*Continued on page* 113)

Concrete for Permanence

CONCRETE PATHS

For best results—build in concrete.

Good concrete has many uses on the farm —paths, yards, tanks, troughs, fence posts, and many other structures are more durable—and more economical if made of concrete.

Decide now to commence that building scheme you've had in mind — and specify Wilsons Portland Cements for dependable results. Made in three types.

"STAR" Brand for durability. "Wilsonite" Rapid Hardening for speed. "Repello"—the water-proof cement.

TANKS

WILSONS N.Z. PORTLAND CEMENT LTD.

SOUTH BRITISH INSURANCE BUILDINGS, SHORTLAND STREET, AUCKLAND.

5979

Pedigree Sow Records

Contributed by the LIVESTOCK DIVISION.

OF the 86 sows recorded for the quarter ended May 31, 1940, 61 had litters sufficiently good to be included in one of the five grades set out below:—

Grade.	Litter Weight.	
	At 3 Weeks.	At 8 Weeks.
1	120 lb.	360 lb.
2	100 lb.	300 lb.
3	90 lb.	270 lb.
4	80 lb.	240 lb.
5	70 lb.	210 lb.

THE following table sets out the performance of each breed as an average for all sows recorded during the quarter:—

Averages.

Breed.	No. of Sows.	No. of Pigs per Litter.		Litter Weight at		Weight per Piglet	
		Born.	Weaned.	3 weeks.	8 weeks.	3 weeks.	8 weeks.
Berkshire ..	26	9.5	7.8	89.6	291.2	11.4	37.1
Large Black ..	11	10.2	6.9	81.2	251.6	11.7	36.4
Large White ..	5	11.8	9.2	106.8	381.0	11.6	41.4
Tamworth ..	44	9.1	6.9	77.9	255.5	11.3	37.1

In the following list the owner's name and address are given, followed by the herd book numbers of the sire and sow, the weights at three and eight weeks, the number of pigs born and weaned, and the grade of the litter.

Berkshires.

Owner's Name and Address.	Herd Book No. of—		Litter Weight (lb.)		No. of Pigs		
	Sire.	Dam.	3 weeks.	8 weeks.	Born	Weaned	Grade of Litter
Burmeister, O. P., Kairanga R.D., Palmerston North ..	12628	15084	84	304	8	8	4
Catlins Pig Club, c/o. W. S. Wright, P.O. Box 55, Owaka ..	13482	15184	76	195	9	7	—
Catlins Pig Club, c/o. W. S. Wright, P.O. Box 55, Owaka ..	13482	13672	94	340	11	9	3
Drury Pig Club, c/o. J. A. Paterson, Opaheke ..	10989	12942	110	387	11	10	2
Drury Pig Club, c/o. J. A. Paterson, Opaheke ..	10989	14603	91	366	11	10	3
Ellerm, O. C., Sanson R.D., Palmerston North ..	14949	14082	135	435	10	9	1
Fordell Pig Club, c/o. A. P. Melville, Renagour, Fordell	13023	12386	91	244	8	7	4
Hooper, A. W., Dalefield, Carterton	14832	14029	75	294	8	7	5
Jackways Bros., Kainui, Taupiri	12468	14301	74	229	7	5	5
Kahungunu Pig Club, c/o. Rae Gilmore, Nuhaka ..	12780	12811	96	238	10	8	5
Kainui Pig Club, c/o. I. Walter, Kainui, Taupiri ..	12468	13833	80	221	8	6	5
Kyle, F. J. and M. P., Karamu Settlement, Hastings ..	13478	11966	102	316	12	10	2
Macindoe, C. G., Te Matai Rd., Te Puke	13443	12372	109	338	9	8	2
Macindoe, C. G., Te Matai Rd., Te Puke	13443	13518	130	380	11	10	1
Matatoki Pig Club, c/o. S. E. Hall, Matatoki, Thames	15048	14605	65	196	10	7	—
Morrison's Bush Pig Club, c/o. A. Maidment, Greytown	15057	14020	72	237	8	6	5
Ngakura Young Farmers' Pig Club, Ngakura R.D., Rotorua	11862	13569	115	306	10	9	2
Ngatimoti Pig Club, J. A. Brereton, Ngatimoti R.M.D., Motueka	14699	15278	79	286	8	8	5
Otakiri Pig Club, c/o. L. Cristall, Otakiri, Bay of Plenty	13755	13664	77	267	10	7	5
Pohangina Pig Club, T. J. Spelman, Raumai	14740	14589	131	456	9	9	1
Puni Pig Club, c/o. C. E. Gatland, Puni, Pukekohe ..	15126	13415	40	133	12	4	—
Rushton, P., Tatuanui R.D., Morrinsville	12528	14539	113	350	10	9	2
Stokes, N. W., R.M.D., Kaikoura	13980	15116	49	204	7	6	—
Stokes, N. W., R.M.D., Kaikoura	15290	13787	111	306	9	9	2
Waiuku Pig Club, c/o. Wm. S. Morrin, Waiuku ..	11451	13582	70	253	10	8	5
Swann, David, Tikitiki	13156	14794	85	289	11	8	4

Large Blacks.

Birdling, G. C. L., Orari	Tam. 7486	1975	134	391	10	9	1
Birdling, G. C. L., Orari	Tam. 7486	1976	94	321	12	10	3
Gulliver, J. A. N., R.D., Te Puke, Bay of Plenty ..	2268	1693	77	268	13	6	5
Horsham Downs Pig Club, C. G. Houltain, Horsham Downs, Hamilton	2356	2068	59	245	7	7	—
Kereone Pig Club, E. Topham, Kereone, Morrinsville	2426	1990	55	147	12	5	—
Ngongotaha Pig Club, c/o. K. M. Martin, Box 13, Ngongotaha	2271	1651	98	266	6	5	4
Omeheu Pig Club, c/o. J. E. Mussett, Box 12, Whakatane	1352	1911	75	218	10	8	5
Opotiki Young Farmers' Pig Club, c/o. G. F. Bennett, Waireka, Opotiki	1957	1942	75	223	15	6	5
Rangiriri Pig Club, c/o. C. R. McCutchan, Rangiriri	1861	1739	109	329	14	7	2
Silverdale Pig Club, c/o. C. C. Grut, Silverdale ..	1931	2277	43	148	3	3	—
Turner, C. T., P.O. Box 161, Rotorua	2271	2108	74	212	10	10	5

Owner's Name and Address.	Herd Book No. of—		Litter Weight (lb.)		No. of Pigs.		
	Sire.	Dam.	3 weeks.	8 weeks.	Born.	Weaned.	Grade of Litter.
Large Whites							
Keiller, B. E., P.O. Box 272, Palmerston North	5108	4998	121	458	13	11	1
Mortensen, H. C., Mauriceville W.	4895	5068	111	461	17	12	2
Paerata Pig Club, c/o. A. R. Dunning, Grey Street, Pukekohe	4943	4905	51	175	8	6	—
Rowlands, T. E., Ruthin R.M.D., Kaiapoi	4548	4985	120	353	12	8	2
Rowlands, T. E., Ruthin R.M.D., Kaiapoi	4548	4984	131	458	9	9	1
Tamworths.							
Awakeri Pig Club, c/o. W. J. Hepburn, Awakeri, Whakatane	10220	10628	70	167	9	6	—
Awamate Pig Club, c/o. W. Richmond, Awamate, Wairoa, H.B.	9637	9722	54	155	8	5	—
Blunt, W. H., Private Bag, Greymouth	10764	10630	61	307	10	8	—
Boyle, A. D., Orari, South Canterbury	11182	10561	133	493	10	10	1
Christie, W. R., "Blair Athol," Balclutha	10657	8955	67	384	10	8	—
Dalefield Pig Club, c/o. W. Press, Dalefield, Carterton	9885	10072	109	325	9	7	2
Dovedale Pig Club, c/o. R. J. Burnett, R.M.D., Wakefield	8252	11531	101	313	9	8	2
Geraldine Orari Pig Club, M. Brophy, Pleasant Point, Geraldine	10755	11312	131	420	10	10	1
Gulliver, J. A. N., R.D. Te Puke	9142	10292	120	339	14	9	2
Hauiti Pig Club, c/o. W. M. O'Connell, Tologa Bay	3761	8967	60	254	10	7	—
Hickmott, E. J., North Rd., Belfast, Christchurch	3168	11146	76	220	8	8	5
Hickmott, E. J., North Rd., Belfast, Christchurch	10565	10569	80	225	9	5	5
Hickmott, E. J., North Rd., Belfast, Christchurch	8788	11145	64	197	7	7	—
Hoanga Pig Club, c/o. A. Bonham, Hoanga, Dargaville	9780	9893	77	252	7	6	5
Hunua Pig Club, c/o. A. M. Stewart, Hunua	9877	11159	45	118	9	4	—
Inangahua Pig Club, c/o. J. D. O'Regan, Inangahua Landing, Reefton	11444	10138	92	238	9	7	5
Kaikoura Pig Club, c/o. F. Sharp, Box 44, Kaikoura	10502	11075	76	276	11	7	5
Kaikoura Pig Club, c/o. F. Sharp, Box 44, Kaikoura	10502	10289	73	202	10	6	—
Kaukapakapa Pig Club, c/o. F. Taylor, Kaukapakapa	9918	5879	38	180	10	5	—
Kirkland, Wm., "Elmgrove," Mosgiel	11105	11458	72	89	9	6	—
Levin, Pig Club, c/o. J. E. Honore, Gladstone Road, Levin	10746	10143	104	373	10	10	2
Mahakipawa Pig Club, c/o. M. E. Bryant, Mahakipawa	9433	9666	86	244	7	6	4
McCutchan, C. R., River Road, Rangiriri	10222	10751	83	270	10	8	4
Mangatarata Pig Club, c/o. C. E. Rayner, R.D., Waitakaruru	11242	11316	49	170	9	4	—
Martinborough Pig Club, c/o. F. B. Wright, Tawaka, Martinborough	10446	9748	55	171	13	5	—
Methven Pig Club, c/o. A. G. Rawlinson, Methven	8252	10816	81	354	9	8	4
Muff, S. K., Ohapi, Orari	11359	7466	95	256	10	7	4
Munro, K. R., P.O. Box 3, Pokeno	10921	11292	75	274	7	7	5
O'Connell, W. M., Paramata, Tologa Bay	10159	10962	77	247	7	7	5
Otautau Pig Club, c/o. D. Y. Russell, Aparimu R.D., Otautau	10888	11106	101	316	8	8	2
Otumoetai Pig Club, c/o. J. Jefferson, Otumoetai, Tauranga	10293	10351	57	198	8	6	—
Paengaroa Pig Club, c/o. H. Jones, R.M.D., Te Puke	9142	10179	128	414	11	11	1
Philpot, M. E., Medbury, R.M.D., Hawarden	10340	11610	78	258	8	7	5
Philpot, M. E., Medbury, R.M.D., Hawarden	10340	11617	88	270	8	8	4
Philpot, M. E., Medbury, R.M.D., Hawarden	10340	11616	85	252	11	9	4
Pokeno Pig Club, c/o. K. Munro, Box 3, Pokeno	10921	10425	92	348	11	9	3
Pokeno Pig Club, c/o. K. Munro, Box 3, Pokeno	10837	10734	41	112	7	4	—
South Featherston Pig Club, c/o. R. Foss, Featherston	5157	9746	109	281	10	9	3
Tatuanui Pig Club, c/o. C. Rushton, Tatuanui	10900	10092	55	146	5	4	—
Te Arai Pig Club, c/o. F. Robb, Manutuke, Gisborne	11358	9574	45	140	10	4	—
Te Arai Pig Club, c/o. F. Robb, Manutuke, Gisborne	11358	9911	85	280	13	7	4
Te Matai Pig Club, c/o. K. H. Rolfe, Te Matai Rd., Te Puke	9142	10184	57	193	8	5	—
Te Wairoa Pig Club, Rotorua	6564	10352	106	276	6	5	3
Whakatohea Pig Club, c/o. F. Amoamo, Lower Waiaua, Opotiki	10781	10426	78	243	8	6	5

Establishing a Pasture Irrigation—*Continued from page 111*

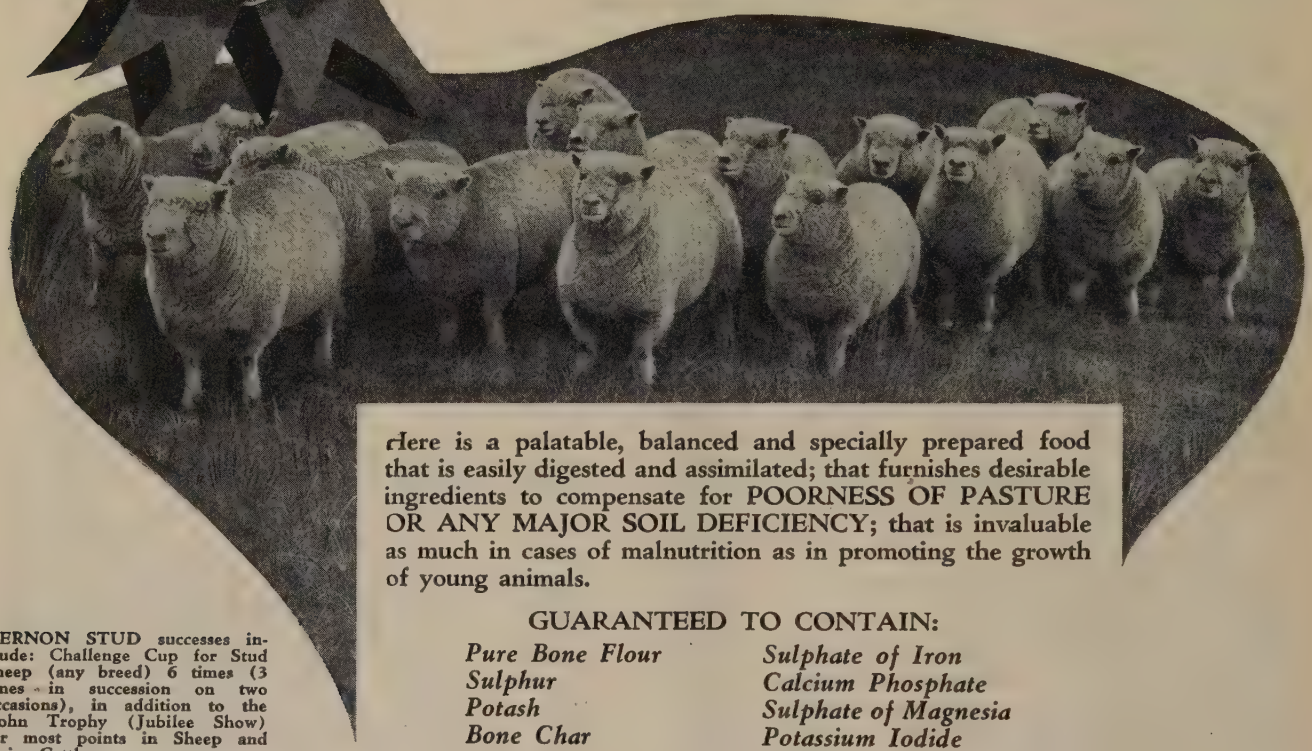
irrigations and the amount of water required. For the first season, however, care and attention in keeping the soil moist will be amply repaid by having a high-producing, even sward as against an uneven, patchy pasture produced by haphazard irrigation or by allowing the soil to become dry at times.

As the humus is built up by accumulated organic matter, such as decaying leaves, animal droppings and straw from hay, etc., the need for frequent irrigations will be lessened as this mulch of humus prevents evaporation and becomes a valuable holder of moisture.

The practice of sowing a grain cover crop with the pasture under irrigation is even less desirable than doing so when sowing down a paddock without irrigation. When a cover crop is used and irrigated the growth is such that the grasses are either partly smothered or drawn up and weakened to such an extent that when the crop is removed recovery of the grass is poor and patchy. If the cover crop is not irrigated the competition between the grasses and the crop is such that the grasses again suffer in the struggle for existence with a low soil moisture-content.

Champions!

The outstanding Southdown ewes shown below, property of MR. GEO. HUTCHINSON, Vernon Stud Farm, Wharepapa, were fed on "WONDER" MINERAL STOCK FOOD.



Here is a palatable, balanced and specially prepared food that is easily digested and assimilated; that furnishes desirable ingredients to compensate for POORNESS OF PASTURE OR ANY MAJOR SOIL DEFICIENCY; that is invaluable as much in cases of malnutrition as in promoting the growth of young animals.

GUARANTEED TO CONTAIN:

Pure Bone Flour	*Sulphate of Iron*
Sulphur	*Calcium Phosphate*
Potash	*Sulphate of Magnesia*
Bone Char	*Potassium Iodide*
Cobalt	*Charcoal*
Salt	*Meal*
Limonite	*Molasses*

VERNON STUD successes include: Challenge Cup for Stud Sheep (any breed) 6 times (3 times in succession on two occasions), in addition to the Kohn Trophy (Jubilee Show) for most points in Sheep and Dairy Cattle.

At the Auckland A. & P. Show in February, with one exception, EVERY SHEEP THAT WON A CHAMPIONSHIP WAS FED ON "WONDER" MINERAL STOCK FOOD — A CLEAR-CUT RECORD OF ITS KIND.

WONDER MINERAL STOCK FOOD

Manufactured and Distributed by WONDER DISTRIBUTORS LTD., P.O. Box 129, Feilding.

FACTORIES AT PALMERSTON NORTH AND CHRISTCHURCH.

Electric Fencing

Last month a series of articles on electric fences were published, but because of pressure of space it was not possible to give a complete selection of the material which had been collected by members of the Fields Division. This month further articles from the survey are presented, and at a later date the experiences of farmers, which are cordially invited, will be published.

Control of Sheep on Hill Country

— By —
A. R. DINGWALL,
Instructor in Agriculture, Wanganui.

IN the reconditioning of deteriorated hill country areas, especially those reduced to a state of comparative unproductiveness under the influence of invading secondary growth, one of the most outstanding aids to success is closer subdivision of the areas concerned. The control of stock and judicious regulation of the grazing management of pastures on any farming area is greatly facilitated by the provision of suitable and adequate subdivisional fencing, and the stock, the pastures, and the farmer profit accordingly.

One is inclined to associate close subdivision with highly productive areas devoted to dairy farming and fat lamb production, and it is certainly under such conditions that subdivision of the total area of a farm into small pasture units is carried to its fullest limits. Yet on hill country farms the need for subdivision is none the less imperative, although the area of individual pasture units will obviously be larger than those desirable on high-carrying capacity dairy and fat lamb farms.

Main Object

The main object of subdivision—control of grazing—is the same in both instances, but while the dairy farmer and fat lamb producer are largely concerned with subdivision as it affects the optimum utilisation of all the herbage from their highly producing pasture swards, the hill country man is perhaps more concerned with subdivisional fencing as an aid in the prevention or suppression of invading secondary growth.

Where secondary growth, fern and scrub, etc., is making its appearance or has already become strongly established, concentration of stock on the area is required in order to crush out the undesirable growth or to check any reappearance once the fern or scrub has been burnt off and the area regrassed. Where the property is not adequately subdivided and individual paddocks cover extensive areas, the desirable stock concentration is usually difficult to arrange under normal farming conditions, and the desired results cannot usually be attained unless further subdivision can be provided.

On hill country properties the expense and capital outlay in fencing is even of greater importance than on most of the closely subdivided, high carrying capacity farms in dairying and fat lamb districts. In the former case the length of fencing required many easily run into many miles. Fencing material is often very expensive to land on the property as well as on to the line of erection, and difficulties associated with the conditions under which the fence has to be erected call for more material and a greater expenditure of time and labour, thus adding considerably to the total cost of erection.

Shortage of Materials

Even on most of the hill country farms the times when good fencing material, such as posts and battens, were to be had for the splitting are long since passed, so that all fencing requirements have to be purchased. In normal times the erection of a standard seven-wired fence is costly, but under the present war conditions the construction of standard fencing is almost, if not entirely, prohibitive.

Alternatives have thus to be sought. On some of the more fortunate farms existing fences might provide sufficient wire to give the necessary fencing re-

★THE PREMIER de Luxe ELECTRIC FENCE CHARGER
. . . . is the one you will ultimately install . . . .

because

The Premier "Hot" Fence is 100% effective.
The Premier saves up to 80% of fencing costs.
The Premier is the standard at which others aim.
The Premier is constructed to last a lifetime.
The Premier is an investment, not an expense.
The Premier is unconditionally guaranteed for 12 months.

For Full Particulars of the Premier Fence Charger and Battery Charger, write to sole New Zealand Distributors:
PREMIER PRODUCTS LTD., HUDDART PARKER BUILDINGS, WELLINGTON

adjustments, but these will form only a small portion of the number of farms where additional subdivisional fencing is desired. It is therefore necessary to seek for other means whereby the limited supplies of wire, either existent on the farms or purchasable, might be put to the most extensive and serviceable use. In this respect the electric fence appears to offer considerable promise in the adequate control of stock, with reasonable economy both in fencing material and time and labour in the erection of the fence.

Still Under Trial

This form of fencing has already been proved effective in the control of dairy stock and of good service to the dairy farmer, but its usefulness on hill country is still under trial. This is probably due to two main factors, firstly, because of the need for careful and regular supervision of such a fencing installation, and secondly, because of uncertainty in the control of sheep.

The first is a problem which becomes accentuated on hill country areas where the fence lines run over most difficult terrain, where long lines of fencing are required and are often situated at some considerable distance from the homestead, and where recurring secondary and pasture growth is likely to cause "shorting" of the electrical circuit of the lower wire or wires. However, most of these difficulties can be overcome by careful attention in the erection of the line and where some supervision can be given at not too infrequent intervals when the line is in use. Most modern "controllers" used to electrify the fence are provided with a fault indicator, which functions immediately on the development of any short circuit or excessive leakage of current, and if the system is properly designed there should be little difficulty in locating the exact position of the fault.

The difficulty in controlling sheep is not quite so easily surmounted if 100 per cent. control is imperative. Sheep are less susceptible to electrical shock than other farming livestock, mainly because of the insulating property of their wool. Consequently, the electrical fence is more likely to prove less effective when they are in full wool than immediately following shearing. It has thus been found that the electric fence does not give complete control of sheep, but in many instances, on hill country farms in particular, this is neither a very serious nor deterring factor, for when stock are concentrated for crushing purposes no serious consequences are likely to result if a few of the animals break bounds.

Practical Experience

On the property farmed by Major D. E. Gardner, Makakaho Road, Raetihi, electrical fencing is being used extensively and to good purpose for subdivisional fencing under conditions typical of a great deal of our hill country. Here, the cleaning up of secondary growth is one of the chief objects, and Major Gardner is quite satisfied that in the subdivisional work the electric fence is very efficient and economical.

An instance was cited of a rough area of 12 to 15 acres bounded on two sides by a road fence and which two seasons ago was almost completely overrun with bracken fern. A fence line was cleared along a bordering ridge and a three-wire electric fence installed to cut the rougher section off from the cleaner country. The area was then stocked with cattle and 300 sheep. This resulted in the heavy stocking and hard grazing conditions necessary for the suppression of secondary growth, which was quite satisfactorily carried out without any of the cattle breaking out, and with not more than 20 to 25 of the sheep negotiating the fence line at any time during the period.

Major Gardner recommends that the sheep be trained to the electric fence by holding them in a small dummy enclosure before placing them out into any paddocks where this form of fencing is in use. This training is best carried out after shearing or when the sheep are in the short wool stage.

Specifications

The fencing specifications recommended by Major Gardner for this class of work are three wires with posts spaced approximately 1 chain apart and six or seven battens between the posts. The wires consist of two barbs, with a plain wire along the bottom, the spacings considered most suitable being 6 in., 16 in., and 36in from the ground respectively. Originally, only the top and bottom wires were electrified (the centre plain wire acting merely as a baulk wire), and the spacings were approximately 9 in., 20 in., and 36 in. respectively. The higher spacing of the two bottom wires and non-electrifying of the centre wire are, however, not considered satisfactory for the control of sheep.

A plain wire is used along the bottom, as a barbed wire in this position becomes wrapped with wool, which obviously adheres more readily to the barbed wire than to the plain wire. Barbed wire is considered essential for the top and probably desirable for the centre wire for the control of cattle. (The plain wire used is No. 10, and is quite satisfactory.)

Insulators

Porcelain egg-type insulators are used on all straining posts, with cotton reel types on angle posts. On intermediate posts and battens the wires are insulated and affixed by wedging the wire between two-inch square pieces of motor tyre nailed in position, preferably by lead-headed nails. In some places where wires might be easily lifted it has been found necessary to tie down the wire on to this insulation with fine wire. These home-made insulators are quite effective and certainly economical, and result in very little trouble from short circuiting.

Well over a mile of this three-wired fencing is already in use, and the length is being extended as time permits. A six-volt motor-car battery supplies the power, and requires recharging about once every five months. The only places where fencing higher than 3 ft. is desired are considered to be at gateways, particularly corner gateways, where cattle are concentrated when shifting from one paddock to another.

General Saving

This example shows the direct and substantial saving in material, both timber and wire, time and labour in erection, and, consequently, in capital outlay which can be achieved with the electric fence in comparison with the ordinary standard wire fence, and although the electric fence may not be so efficient as the ordinary wire fence, it nevertheless proves quite sufficient in the circumstances which apply to a great deal of the subdivisional fencing requirements on many hill country farms.

Soil Conditions Affect Efficiency Of the Fence

By E. B. GLANVILLE,
Instructor in Agriculture, Whangarei.

ELECTRIC fences have become very popular on dairy farms in this district. My observations in the efficiency of electric fences have been confined to dairy farms, where the animals which require controlling generally consist of dairy cattle and pigs.

Much is heard for and against the efficiency of this type of fencing, but it appears now to be a well-known fact that a great deal depends on the method of training the animals receive when the fences are first installed. If an animal comes in contact with an electrified wire for the first time while soil conditions are wet the shock received is of greater intensity than when soil conditions are dry. It is the general experience that an animal which receives its first shock under these conditions will not again risk coming in close contact with the fence.

Photo above—These pigs have been well trained. They will not risk coming near the fence.

Photo above—A one-wire electric fence is sufficient to protect a hay stack from grazing cattle.

Controls Fence-breakers

Trouble has often been experienced with animals breaking through one- or two-wire electric fences when the soil conditions have been dry at the time of erecting the fences. Dry soil conditions do not provide a good earth, and this has the effect of reducing the shock considerably, so much so that stock just break through the fence at will.

This difficulty can be overcome by installing an efficient machine, one in which the voltage can be so increased

Photo below—One wire on an existing fence electrified. The bull in this picture could not be held safely in a paddock before the electric fence was installed.

during dry weather that the shock is still effective. Machines that cannot be adjusted in this manner are efficient only under moist soil conditions.

From information obtained from dairy farmers who have had electric fences installed for some time, the general opinion is definitely in their favour. This type of fence is most efficient for controlling pigs and protecting hay stacks and shelter belts from dairy cows, while it has been demonstrated that even a one-wire electric fence will hold the worst type of gate- and fence-breaking bulls.

The control of bulls on a dairy farm is often a difficult problem, even where the fencing is of high standard, and when it has been shown that a one-wire electric fence will hold a bull which was previously a constant worry by wrecking and breaking through good fences the electric fence has much in its favour.

One-wire electric fence protecting a shelter belt. Calves graze up to the wire, but do not attempt to break through.

Stock Must Be Trained

By C. R. TAYLOR, Fields Instructor, Hamilton.

FOR the purpose of ascertaining the opinions of farmers on the merits or otherwise of the electric fence, I have contacted several users, and all are satisfied with the results obtained with dairy cattle.

I have not as yet met a farmer who has employed the electric fence with sheep, and only one who has used it to control pigs. This man claims that it is a success if two barbed wires are used and the posts are spaced at fairly close intervals and are not too flimsy.

A more or less make-shift arrangement is stated to be useless as wires soon sag and touch the ground and posts rot or are pushed over. Thus, pigs are badly trained from the start, and if a proper electric fence layout is provided at a later stage much trouble is frequently encountered as a result.

With dairy cattle, the general opinion seems to be that the electric fence is excellent if properly used. It has a great many uses on the average dairy farm, such as the rationing of grass, breaking-off root crops, protecting hedge-rows, fencing off drains, hay and ensilage, subdividing paddocks, either temporarily or permanently, and for quickly constructed stock-holding enclosures.

Illustrating an attempt to drive young dairy stock over a wire lying on the ground and disconnected from the electric fence controller. The fence was used to protect the hedge in the background and also to break-off the pampas grass for more efficient grazing. For both purposes the electric fence proved highly satisfactory.

It is insisted, however, that stock must first be trained to respect the single wire fence by so constructing it that the maximum efficiency of the controller is available at every point on the fence. This involves good insulation of the wire and a really good earth, not only at the controller point, but also along the whole length of the wire.

If this work—that is, the training of stock—can be undertaken during the time the soil is really moist then the effectiveness of the electric fence is much greater, as the shock is certain and of far greater intensity. If, on the other hand, the dry summer months are chosen for the initial training, the

efficiency of the fence is greatly reduced, and stock accordingly take little notice of the mild shock they may or may not get. Fence-breaking is then the result, and this is difficult to remedy at a later stage.

Once well trained, animals respect the electric fence for all time, provided its efficiency is maintained by reasonable care and attention to simple details.

I recently witnessed a striking demonstration of the efficacy of the electric fence with dairy cattle. A farmer had an acre and a half of pampas grass he wished to graze off, but was rather concerned for the safety of an excellent hedge of *Cryptomeria Japonica* which surrounded the plantation but which was unfenced from the pampas grass.

To overcome the difficulty he procured an electric fence controller and ran one barbed wire around the area between the hedge and the pampas grass about three feet from the ground and supported on roughly split stakes of batten size, pointed at one end and spaced approximately ½ chain apart.

Another view showing the cattle in a new break of pampas grass and the wire which caused so much trouble once again in place and electrified. Being only a temporary fence, there is no need for strong lasting posts, but for a permanent fence lasting materials are essential.

The pampas grass was fed off in sections by connecting a short length of barbed wire across the plantation to the two outside wires and moving this cross-link from time to time as required.

I visited the farmer when he was trying to persuade some dairy cows to proceed into a new section of pampas grass by stepping over a wire that had been disconnected from the controller and lowered to the ground from its supporting stakes.

Without any exaggeration, the farmer, myself and a dog experienced a lively five minutes or more "bullying" the cattle across a perfectly harmless piece of wire lying on the ground, and when at last we did manage to get them across most of them took it at the jump.

EFFECTIVE . . .

A single barbed-wire and inexpensive light wooden stakes 40 to 50 feet apart with a WORLD Electric Fencer will hold live stock more securely than any other method. A few harmless shocks from a WORLD charged fence will change any animal's reckless contempt to that of wholesome and lasting respect for single wire.

SAFE—THE WORLD ELECTRIC FENCER IS ABSOLUTELY HARMLESS TO MAN OR BEAST.

WIRE SHORTAGE SOLVED AND MORE PRODUCTION ASSURED!

ECONOMICAL . . .

WORLD Fencers are supplied with a specially designed long-life 6-volt storage Battery which costs no more than an ordinary battery; the current is sufficient to charge a 15 to 20 mile fence for 3 or 4 months. The TELL TALE DIAL shows at a glance the condition of the fence and the charge of the battery. The initial cost of the Fencer is saved in the first 15 chains of fence erected.

It is generally known that FENCING WIRE is UNPROCURABLE and that the shortage is bound to last indefinitely.

RECONSTRUCT your existing fencing along modern lines through the installation of the . . .

ELECTRIC "WORLD" FENCER

Made in New Zealand, for long service UNDER NEW ZEALAND CONDITIONS

Full installation and operating instructions with each fencer supplied.

N.Z. Distributors:— HAMER ELECTRICAL CO. LTD.

AUCKLAND - - - - - CHRISTCHURCH

The Hamer Electrical Co. Ltd.,
P.O. Box 798, CHRISTCHURCH.

Please forward price leaflet giving full information regarding the WORLD ELECTRIC FENCER, together with name of nearest Agent.

.....

..... J.A.

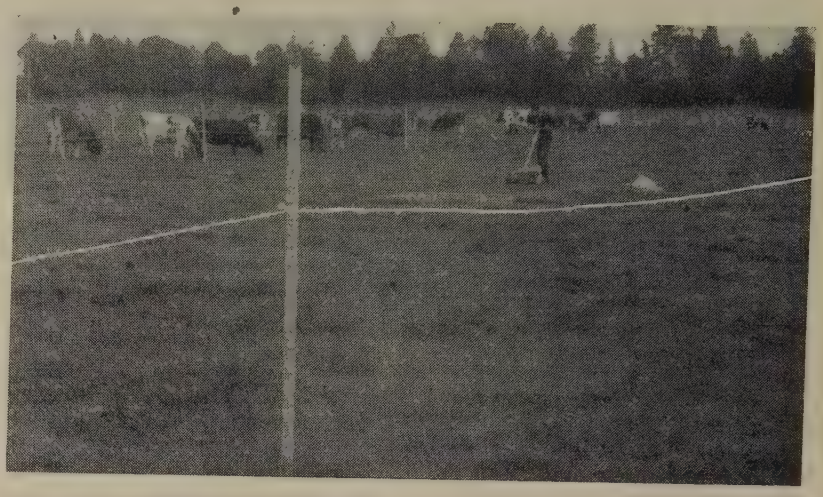
Aid In Experimental Work

By E. R. MARRYATT, Ruakura Animal Research Station.

AT Ruakura Animal Research Station we have been continuously using five controllers (electric fence machines) for several months to enable us to carry out some of our experimental work economically.

We use electric fences for rationing-off saved grass to cows (Fig. 1) and to protect experimental plots in fields which are being grazed. We have used only one wire at about 32 inches from the ground for cattle, and two wires at about 10 inches and 32 inches from the ground for sows and cattle grazing together.

Our electric fences have been entirely satisfactory, and without them we would have been put to very great expense to do their work in another way. Most of these fences are very temporary, and are shifted every two to seven days. This frequent shifting is possible only because of the simplicity of the electric fences; erection and dismantling is time, material and labour-saving.



Rationing-off saved grass by means of an electric fence.

On Commercial Farms

Our protected plots in grazed pastures are paralleled on commercial farms by fenced-off stacks of hay and silage and pits containing roots. Our electric fencing for the rationing-off of saved grass to cows, while already practised by some, is probably destined to become widely adopted as a result of research work yet unfinished. Our experience and opinion of electric fencing will, therefore, be of intimate concern to farmers.

Wet and Dry Batteries

We find that wet batteries are much more economical than dry batteries which, with us, retained a high charge only for about six weeks of continuous running. We use up dry batteries which have become too low to work efficiently on their own by arranging them "in parallel."

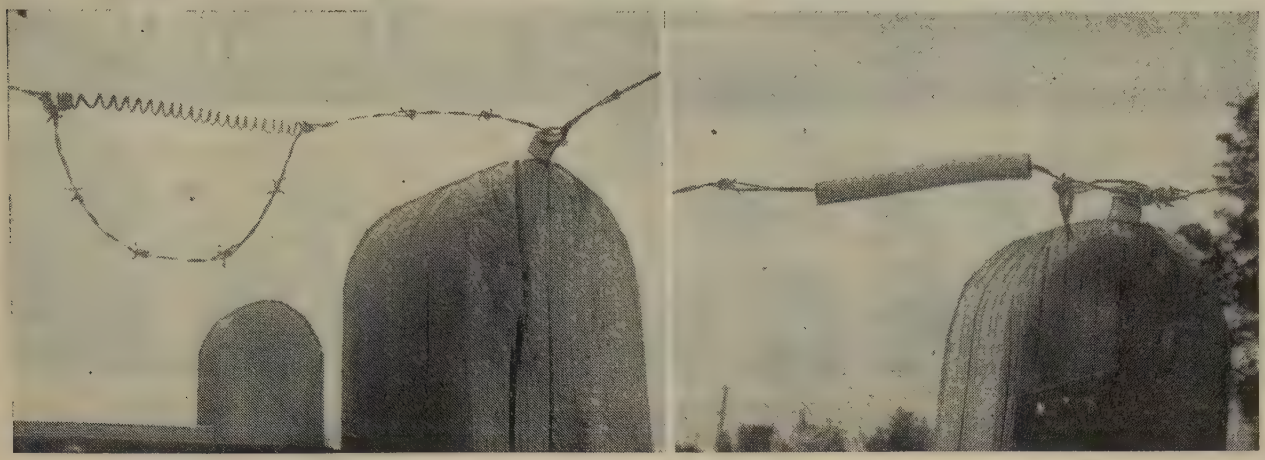
Although some say that the controller does not need to be operating continuously because the stock do not know when it is switched on or off, we thing that it is wise—especially when, as in experimental work, failure of the fence to hold stock would be serious—to keep the fences "alive" whenever it is required to hold stock. (Although they may not know when the fence is dead, stock can easily find out by accident.) The other policy is likely to prove to be that of "penny-wise and pound-foolish."

Electrified loop to prevent stock from rubbing against a non-tied angle-post.

Angles in Electric Fences

It has been suggested that angle posts need not be tied unless the angle is less than 135 degrees. As our fences are so very temporary, we do not tie angle posts even when the angle is 90 degrees. We use iron fencing standards, and at a right-angle in the fence we drive the standard into the ground on a slope so that the standard leans away from the inside angle of the fence. The electrified wire is then suspended from the inner side of the angle-post.

To prevent stock from rubbing against the angle-post a broad loop of barbed wire is twisted on to the electrified wire on each side of the standard so that the loop is on the outside of the standard (Fig. 2).



A very simple gateway for temporary electric fencing.

Gateways

The gateways devised by Mr. C. S. Brook, of Te Kuiti, are excellent for permanent electric fencing, but for temporary electric fencing (as for feeding-off a crop in breaks) a much more simple gate may be used. In our one-wire electric fences we simply cut the wire and make a hook and a loop of the two ends.

Figs. 3 and 3A show a gate of this type where the electrified wire is being carried along the top of a permanent wire fence as a conduit for the electricity and so that a lead can be taken from it at any point. The broad loop and spring are advantages, but not necessities. The piece of old rubber tubing from a milking machine allows handling of the "gate" while it is alive.

YOUR SOUNDEST FARMING INVESTMENT . . .
Challenge
AERATED SUPER
MANUFACTURED BY CHALLENGE PHOSPHATE CO. LTD., AUCKLAND

Young Jack showed the Old Timer

OLD-TIMER: *"You know, Jack, if I could subdivide, I'd raise the farm's output by 25 per cent."*

JACK: *"What's stopping you, Dad? Wire?"*

OLD-TIMER: *"Of course. How in the name of fortune can a man fence without wire?"*

JACK: *"I'll show you. You get me a Prime Electric Fence Controller and I'll get all the wire we need."*

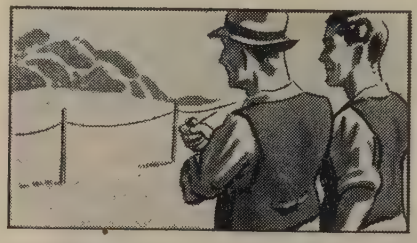
OLD-TIMER: *"Electric Fence? I'll have no more of those new-fangled things here! The last one broke down and cost me a turnip crop."*

JACK: *"That's because you paid a cheap price for a cheap job. Old Fred Smith up the road has a Prime and he's never had a second's trouble. Prime is the best seller because it's the best electric fence controller built."*

(Two days later.)

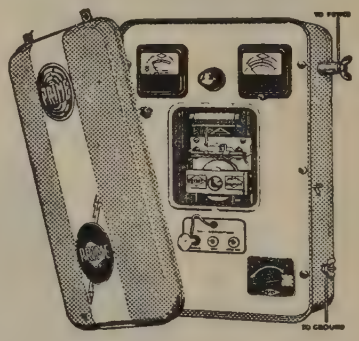
OLD-TIMER: *"Well, here's your Prime Electric Fence Controller, but, say, where did you get that wire?"*

JACK: *"Oh, that's a single strand from the new fence on the 40-acre paddock. There's enough here to do all our sub-division electrically."*



JACK: *"Well, there you are, Dad. Not bad, is it?"*

OLD-TIMER: *"Great, son. You beat the wire shortage and you certainly showed an old-timer what a real Electric Fence can do."*



PRIME
TRADE MARK

ELECTRIC FENCE

THE CONTROLLER WITH FIVE VITAL ADVANTAGES

PRIME MOTO-CHOPPER: Moisture proof . . . precision built . . . best quality materials.

PRIME TRANSFORMER: Oversize and perfectly made for a lifetime's service.

PRIME ELECTRO-MAGNETIC IMPULSER with compensator and self-cleaning contacts.

PRIME SOIL CONDITION SWITCH, ensuring perfect, uniform performance in all weathers.

PRIME CONTACT POINTS: Highest grade; large nickel silver; no carbonising.

The indoor model No. 660, which is operated from any 6-volt battery. Every possible eventuality is taken care of—adjustment may be made for condition of soil—the condition of the battery is indicated—signal light shows fence O.K.—dustproof cabinet over whole plant, yet everything may be instantly seen.

Sole N.Z. Distributors:

WRIGHT, STEPHENSON & CO. LTD.,
ABRAHAM & WILLIAMS LTD.,
35 Albert Street, P.O. Box 16, AUCKLAND.

TARANAKI: J. B. MacEWAN & CO. LTD., New Plymouth, Hawera, Opunake and Stratford.
HAWKE'S BAY: WILLIAMS & KETTLE LTD., Napier, Hastings, Waipawa, Waipukurau, Dannevirke and Wairoa.
POVERTY BAY: WILLIAMS & KETTLE LTD., Gisborne.
NELSON: IVORY BROS. LTD., Nelson and Motueka.
WEST COAST: DALGETY & CO. LTD., Greymouth.

POST THIS TO-DAY!

WRIGHT, STEPHENSON & CO. LTD.,
ABRAHAM & WILLIAMS LTD.,
P.O. Box 16, 35 Albert Street,
AUCKLAND.

URGENT!

Please post me, without obligation, further details of the "Prime" Electric Fence Controller.

Name .....

Address .....

JA

Experiences on Demonstration Farm Show Good Results

By J. E. DAVIES, Instructor in Agriculture, Hawera.

WITHIN the past two to three years the use of electric fences on dairy farms has been given some prominence. Their general adoption, however, is yet restricted, and may be looked upon as still undergoing the trial stages. In practically all dairying centres there are demonstration areas of electric fencing which have been visited by neighbouring farmers, who in turn have installed trial fences. Some have specific electrifying units, while others have adopted their own ingenuity of electrification.

Proper Erection Important

For cattle, electric fences have given satisfaction, **but it is well to emphasise the importance of proper erection.** They have been successfully used for strengthening existing bull paddocks and pig runs. For bull paddocks a guard-one-wire electric fence some 4ft high and for pigs a similar guard about 10in to 1ft high (depending on the size of the pigs) make the fencing of the enclosures stock-proof.

Two years of experiences with electric fencing subdivision on a 90-acre all-grass dairy farm carrying a herd of 72 cows—namely, Waimate West Demonstration Farm—fully cover the value of this type of fencing on dairy farms. Eight electric one-wire subdivision fences 10 chains long were erected. The electrifying unit was installed in the engine room of the cowshed, with the main lead extending along the race fence to the back paddocks of the farm—some 60 chains—and extensions were taken from this lead in connecting the paddock subdivision fences.

Strong strainer posts were used at each end of the fence, and from these the one-wire strand of barbed wire was tightened. The remaining supporting posts used were ordinary 4ft 6in pine battens, pointed and driven about one foot into the ground at half-chain intervals.

Full Test Given

On top of the posts upright insulators convey the electrified strand of barbed wire 3ft 6in above the ground. Electric one-wire gateways were erected with an underground cable to carry the main lead.

Approximately 150 chains of one-wire electric fencing subdivisioned was given full test to a dairy herd under normal farm conditions, and the results were entirely satisfactory, in that they were stock-proof.

When the fence is installed free from contact and the posts are adequately insulated so that there will be no shorts, experienced users state that the electric fence is most satisfactory and a boon to the fencing problem on South Taranaki dairy farms.

Control of Hill Grazing

By W. R. LOBB, Instructor in Agriculture, Ranfurly.

ALTHOUGH there is not a great deal of use made of the electric fence in the Ranfurly district, the experiences of farmers using them seem satisfactory. One farmer on run country has found the electric fence very useful for enabling him to make more use of the dark faces in summer by fencing these off, thus confining the sheep on places where they will not stay under ordinary run conditions.

This necessitates a long fence, but it has acted quite efficiently. In general, two wires are used. In one case three wires were necessary, but only two were made "live."

For the closer use of some of the large paddocks on the Maniototo Plain the electric fence should be of real use, but little is done in this respect, as extensive grazing is, for the most part, satisfactory under present conditions.

Compensation to the amount of £14,184 was paid out during the financial year ended 31st March last for animals condemned in the field under the provisions of the Stock Act, and £22,510 for carcasses or parts of carcasses condemned for disease on slaughter for human consumption at abattoirs, meat export slaughterhouses, etc., under the provisions of the Slaughtering and Inspection Act.

YOU CAN BE SURE OF SHELL

Vaccination For Pulpy Kidney

THE vaccinating of ewe flocks where losses in lambs from pulpy kidney disease occur has been continued and a larger number of ewes have been vaccinated, states the annual report of the Director of the Livestock Division. Generally speaking, the results have been satisfactory, but some discrimination in the choice of the vaccine will require to be exercised if the best results are to be obtained. The immunity conferred on the young lamb through the colostrum of the ewe is not of a lasting nature and further vaccination of the lambs to protect them through the hogget stage in some districts is necessary. If lambs are being fattened for export it is important that the vaccination should leave no blemishes in the dressed carcass. Inquiries have been made into this aspect of the vaccination of lambs, and field officers have been advised on the matter.

The District Superintendent, Dunedin, writing on the subject of lesions at the site of inoculation, states:—

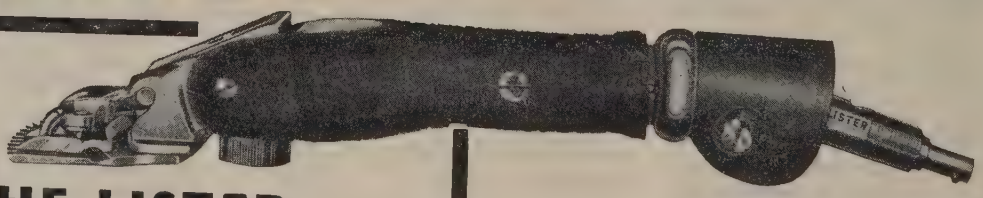
"This has been a subject of general complaint throughout the district following the use of alum-precipitated vaccine. The strongest complaints came from the Strath Taieri, where one owner was so alarmed at the reaction to the first inoculation that the second injection was abandoned. Further very strong complaints were received from the Oamaru district regarding these lesions. The percentage affected in different flocks varies from nil—i.e., none noticeable—to as high as 80 per cent. of the inoculated ewes; figures of 10 per cent. to 20 per cent. are commonly quoted. The lesions take the form of a sterile abscess and vary in size from a pea-like nodule to the size of a walnut. One owner, however, reported lesions of about the size of a 5s. piece. The commonest lesion appears to be a scabby formation on the skin covering a subcutaneous abscess about the size of a bean.

"The lesions persisted till shearing, but by that time had resolved to a varying degree. Many still contained a quantity of greenish semi-fluid pus. At the present time, seven to eight months after inoculation, ewes are coming to the freezing works still bearing the lesions in this state. It would appear generally that the lesions resulting from the inoculation are not sufficient to cause rejection of carcasses for export. However, in the case of lambs a number had to be rejected for export, and in one case nearly the whole of about two hundred and fifty lambs were graded 'second' on account of the excision of the abscesses. Owners have passed adverse comments about the lesions, and such complaints are liable in some places to bring the vaccination into disrepute."

In view of this, the importance of owners using a type of vaccine not liable to produce these results on lambs intended for export has been stressed by the Department. In addition to this, however, the technique of vaccination must be carried out in a clean manner, no matter what type of vaccine is used.

NO SHORTAGE!

"Lister" SHEARING MACHINERY IS STILL AVAILABLE IN AMPLE SUPPLY FOR ALL REQUIREMENTS; FOR EITHER COMPLETE PLANTS OR PARTS.



THE LISTER "STREAMLINE" TRADE MARK

For Perfect, Smooth, Vibrationless Cutting. HERE is a LISTER product that just "blows the wool off" . . . the material, quality of workmanship and finish are of the highest LISTER standard. The "STREAMLINE" tension nut gives minute adjustment of tension . . . you are no longer limited to "a notch at a time." A special check spring fitted around the top of the lid bush expands, and automatically prevents any loss of tension.

The LISTER service maintains an unexcelled standard.

LEVIN & Co. Ltd.

Cnr. FEATHERSTON and BALLANCE STS.

P.O. BOX 1496 WELLINGTON, C.1.

Branches and Agencies throughout New Zealand.

Pig Census Returns

Two Litters a Year Adds 25 per cent. To Your Profits

M. J. SCOTT, Superintendent of the Pig Industry, Wellington.

REPORTS have been published in previous issues of the "Journal" on how pig meat production is influenced by the amounts of meal used, by the amounts of pig meat sold per sow, by the percentage of meat-meal used, and by the carrying of winter pigs. This article deals with the effects of making full use of sows.

On 157 farms, sows produced on an average only one litter a year, and averaged 9.8 pigs born; on 125 farms sows produced approximately two litters a year, and averaged 17.9 pigs born per sow. The mortality rate is 25.5 per cent. and 27.4 per cent. respectively, leaving 9.1 pigs for sale in the first case and 13.4 pigs for sale per sow in the second. The average number of cows milked per farm is 47 and 48 respectively and the average number of sows kept 4.8 and 4.2 respectively. Both groups make the same use of meal, approximately half a hundredweight per cow; both use the equivalent of about one-third of a ton of roots or grazing for pigs per cow milked.

After paying for meal used at the rate of £14 per ton and allowing for roots or grazing at the rate of 5s per ton, the earning value of skim-milk per cow is 32s 6d in the first case and 40s 5d in the second.

These figures confirm the pronouncement made as a result of the previous year's survey of this aspect of pig production, and are of interest not so much for the novelty of the information as for the fact that they put a measure on the importance of getting the fullest use out of sows. Those who get two litters per year get 25 per cent. better returns than those who get only one litter.

Comparative Immunity from Grass Staggers And Milk Fever

LAST spring a comparative immunity from grass staggers in cows (grass tetany) was experienced in the Waikato district, where, hitherto, it has been most prevalent, states the annual report of the Director of the Livestock Division. Commenting on this disease and also on the prevalence of milk fever, the District Veterinarian, Hamilton, writes:—

"Neither of these seemed as prevalent as in previous years, this being particularly noticeable in the case of grass staggers. Probably the late spring and shortage of feed has a bearing on the unusual freedom from these diseases."

Enlarging upon this, the District Superintendent, Auckland, writes:—

"This observation is interesting; in previous years, when the cattle wintered well and spring growth came away early, cases of grass staggers gave a considerable amount of work and worry, as treatment cannot be looked upon as being at all satisfactory. The position with regard to these diseases next spring will be very interesting, as the general conditions with regard to feed this coming winter promise to be the reverse of what they were last year."

As the conditions vary from season to season the dairy farmer requires to adapt his feeding programme to suit the conditions met with. It is particularly important to follow a rational line of supplementary feeding of stock with hay or ensilage in order to balance the diet in a spring noted for an early flush of growth. Such a feeding programme over the critical period will also tend to lessen the incidence of cases of milk fever.

As with grass staggers, milk fever was not prevalent last spring. Isolated cases were seen in the later calving cows which had been on spring feed for some time before calving. The majority of farmers can deal with this disease in its regular form. To those not conversant with the disease advice has been given during the year.

S. OPPENHEIMER & CO., INC.
(Incorporated in U.S.A. as a Limited Liability Company)
Established 1868 in New York, 1892 in New Zealand.
SAUSAGE CASINGS
Manufacturers and Exporters of New Zealand Casings. Importers of American Hog Casings.
Office: 38-42 The Terrace, WELLINGTON.
P.O. Box 350. Telephone 43-373

Veterinary Notes for the Farmer

Discussions on First-Aid Measures

Contributed by the Livestock Division

Care of the In-foal Mare

THE period of gestation in the mare is eleven months. During the first six months of pregnancy little alteration need take place in the mare's usual work; in fact, light, slow work is often carried on up to near foaling time. Fast work is not possible, and work in drays, especially backing, must be avoided. Work in chains as exercise is, however, very desirable in the case of heavy draught mares.

The feeding of the mare during the winter months is important. It is not desirable to have mares foaling in low condition, because the foal will be weakly at birth, and the mare will fail to produce plenty of milk. Overfat mares which are soft and have not had regular light work or exercise are also a danger. Mares in this condition are subject to various oedematous swellings on the limbs, abdomen in front of the udder, or even swellings of the lower chest. Such swellings are manifest evidence of lack of exercise and poor heart action. At foaling these mares are very susceptible to laminitis, commonly termed "founder." The well-exercised mare is much more resistant to this trouble, even though foaling complications may tend to cause the disease in even well-managed stock.

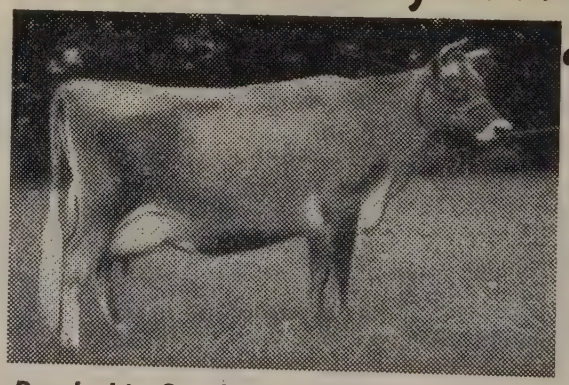
Extra Feeding In the Winter

It is generally necessary to provide some extra feeding for the in-foal mare during the winter months. Good quality hay or good chaff, supplemented if necessary by a small ration of oats daily, should maintain the condition of the mare. The amount of oats fed will depend on the type and amount of work the mare is asked to do. As the foaling date approaches it is an excellent plan to replace half the oat ration with good bran. Bran is laxative in action, and is conducive to the production of milk when the foal is born. It is an excellent foodstuff for any milk-producing animal. If the mare is aged and may have defective teeth, crushed oats should be used in place of whole grain.

As the foaling date approaches constant care and supervision are necessary to see that the mare does not meet with any accident which might complicate matters. In aged, heavy draught mares it is quite common to see a certain amount of swelling in the region in front of the udder. In some cases this gives rise to considerable alarm, and may in old-standing cases bring about rupture through the degeneration of the tendon which supports the abdomen, and which is situated immediately in front of the udder.

The treatment consists of a laxative diet and as much regular, light exercise as can be given safely every day until foaling takes place. The swelling disappears almost immediately after foaling.

Combat infection with



'DETTOL'

As supplied to the Royal Veterinary College, London.

Read this Stock Breeder's Report:

A calf which had been dead for four days was removed from a cow. The removal was successful, but the smell was very offensive. He used undiluted Dettol on his instruments, and also syringed the cow with undiluted Dettol. The result was excellent, which was far more than expected, and the cow was able to walk a little distance next day, and soon got perfectly well.

'DETTOL'
TRADE MARK
THE MODERN ANTISEPTIC

A FREE BOOKLET "*Dettol in Veterinary Practice*" will tell you of this new antiseptic and how to use it for the safe relief of many distressing conditions. Write to Reckitts (Over Sea) Ltd., (Pharmaceutical Dept. 1), 8 Victoria Street, Wellington.

2

Occasionally, a certain amount of inflammatory swelling occurs in the front of the udder in the well-fed young mare foaling for the first time. This need not cause alarm; it does not require any special treatment, and gradually subsides after foaling.

Laxative Diet

As the foaling date approaches it is advisable to see that the diet of the mare is of a laxative nature. This may be assured by the addition of bran to the chaff if the mare is not on green feed. Bran is also of value in ensuring a good milk supply after foaling.

If the mare is due to foal in the paddock it is advisable to see that a level paddock is provided. The paddock should be as clean as possible, free from stagnant pools, and covered with a good sole of pasture. It is advisable to watch the mare closely when foaling is due so that if assistance is required it can be obtained as soon as possible.

Wounds of the Foot in Horses

EVERY year large numbers of working horses are made temporarily or permanently useless by foot injuries of various types.

Before considering the types of wounds of the foot and the special treatment required, it is desirable to stress the economic loss and inconvenience brought upon the farmer by this loss of horse flesh.

Nail Wounds

Chief among these types of wounds are injuries caused by picked-up nails. The most common seats of this type of wound are the point of the frog, the centre of the frog, and the sides of the frog at the junction with the sole. Any part of the sole may, however, be punctured.

The severity of this type of wound naturally depends on the site and depth of penetration of the foreign body. It may or may not remain lodged in the foot, and if the nail or similar object does not remain in the foot the animal frequently shows no immediate lameness. Generally, within two or three days lameness is manifested. On examination of the foot difficulty may be experienced in finding the site of injury, but by careful examination a slight discharge may be found, or an area of heat and pain. If the foreign body is still lodged it should be removed.

In the majority of nail punctures the wound is superficial and only the sensitive frog or sensitive sole is injured, and if the following simple treatment is immediately applied, recovery follows. Neglect often leads to permanent lameness. Where a deep puncture has occurred, with resultant damage of bone and tendon, the advice

COOPER FASTER SHEARING
with the World Famous
COOPER E-B HANDPIECE
(Latest improved)

With years of manufacturing experience behind it, the Cooper E-B is a masterpiece of precision engineering. Its advanced design and the high quality materials used in its construction ensure exceptionally long-lasting, sweet-running, trouble-free service. Fitted with improved joint and bush which *holds* the oil, sealed patent back joint which prevents entry of dirt and grit, improved tension nut, one piece shell, open front and easy comfortable grip, the Cooper E-B is fast becoming the professional shearer's favourite.

Low first cost. Lowest upkeep. Free from trouble. Longer and better service. Available in both wide and narrow cut.

AMPLE STOCKS AVAILABLE.

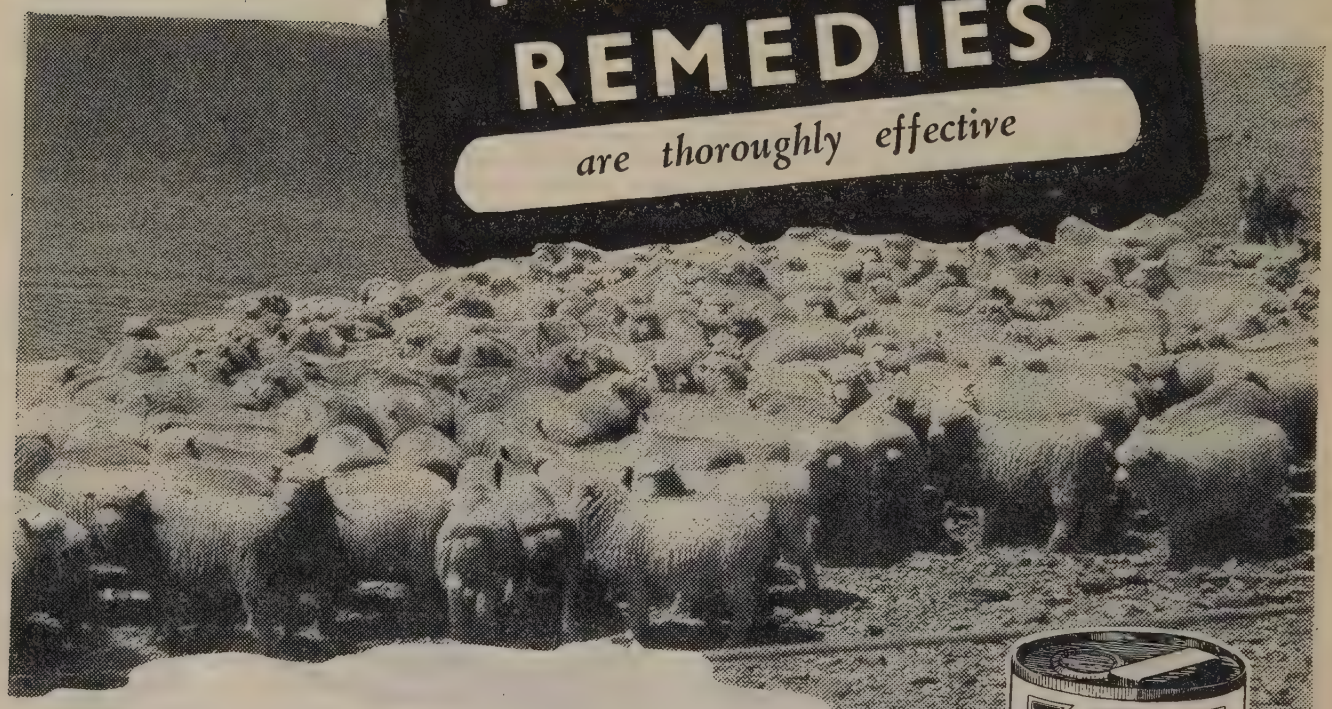
Cooper E-B HANDPIECE

Full information from The Cooper Engineering Co. (N.Z.) Ltd., Nathan's Bond Bldg., Customs Street E., Auckland.

For the Economical Prevention of Foot-rot in Your Flock

COOPER'S FOOT ROT REMEDIES

are thoroughly effective



Foot-rot is a disease which has become exceedingly common and may cause considerable financial loss. On farms where it has previously occured preventive measures become a necessity. Cooper's Foot-Rot Liquid per medium of the footbath supplies an efficient method of controlling the disease both before and after it is known to exist on a property. Mixes instantly with cold water and does not make the hoof brittle. For individual treatment of affected sheep a hand-dressing of Cooper's Foot-Rot Ointment is invaluable.

Cooper's FOOT-ROT LIQUID and Cooper's FOOT-ROT OINTMENT

OBTAINABLE FROM YOUR MERCHANT

COOPER, McDOUGALL & ROBERTSON (N.Z.) LTD., Customs St. East, Auckland, C.I.

of a veterinary surgeon should be sought.

Treatment

The shoe should be removed, the hoof thoroughly cleaned, and the horn thinned in an area around the puncture, and at the point of puncture the horn removed to allow adequate drainage. The foot should be bathed twice daily in a hot antiseptic bath, followed by application of a strong antiseptic to the wound. Then encase the foot in a leather or canvas boot packed with tow soaked in Stockholm tar.

Wounds from Sharp Bodies

Injuries caused by treading on sharp bodies, such as glass, pieces of iron, etc., are also common. In these cases the superficial wound is usually more extensive. The frog may be badly lacerated, and sharp-pointed objects may penetrate the cleft of the frog.

Treatment is similar to that for "picked-up nails." Adequate drainage must be supplied, and in long-standing cases in which discharge of dirty, greyish pus from the coronet or heel has occurred this is of utmost importance.

The necessity for thorough and adequate antiseptic treatment will be appreciated when one considers that more cases of tetanus or lock-jaw follow from punctured wounds than from large, gaping flesh wounds. Punctured wounds are a definite danger in this respect.

—W. D. ROBINSON, Veterinarian, Christchurch.

Sarcoptic Mange in Pigs

THE accompanying photograph gives some idea of the loss of condition resulting from sarcoptic mange in pigs. The sow had been affected without the cause being suspected for 12 months. In spite of reasonable feeding she was seriously emaciated, and a large part of the body was covered by thick crusts and scabs. Itch was marked. The litter was similarly affected, and was failing to make due progress. A thorough oiling had been given a few days before the photograph was taken, and already there was considerable improvement in the state of the skin.

A sow affected with sarcoptic mange. The photograph was taken five days after the application of oil.

M. Merry, photo.

Sarcoptic mange is a scheduled disease under the Stock Act, and it is the duty of the owner of a pig showing suspicious symptoms to report it to his Inspector of Stock, just as with tuberculosis of cattle. For a period after its first detection in New Zealand about 10 years ago, reported outbreaks were somewhat frequent. In recent years cases have been few. This is probably due to the thorough methods adopted in reported outbreaks, and also to the fact that oil dips have been installed in many of the more extensive piggeries.

Farmers should still be on the lookout for the condition, however, as unsuspected cases evidently still occur, being sometimes, as in the above instance, in a white pig, mistaken for sunburn.

Mange is due to an almost microscopic mite living on and burrowing into the skin. The outstanding symptom in early cases is the intense itch, causing constant rubbing, but a scabby, thickened, and reddened condition of the skin soon develops, at first often behind the ears and on the shoulders, but later extending over the body.

The disease is infectious, and spreads among the pigs. Suckers may become infected following a comparatively inconspicuous lesion on the sow.

There is considerable loss of condition. In some outbreaks many of the weaners and slips may die from pneumonia, etc., the mange being the primary debilitating cause allowing these troubles to develop. Treatment by thorough oiling, or dipping in an oil bath where many pigs have to be dealt with, is practically 100 per cent. efficient, and the resulting improvement is prompt. Naturally, all pigs in contact, even though showing no visible signs, must be treated.

—D. MARSHALL, District Superintendent, Wellington.

Answers to Correspondents

Removing Retained Membranes In a Dairy Cow

"DAIRY FARMER" (MIDHURST):—

Please advise me as to the best method of dealing with retained membranes in the dairy cow.

LIVESTOCK DIVISION:—

That portion of your letter dealing with livestock has been referred to this Division for reply. The subject you have raised has been discussed and debated from several angles, and it is difficult to be dogmatic on the best method to follow in such cases. The owner must be guided in his efforts by general rules, and must attempt to assist Nature as far as possible in the removal of the retained membranes. A good deal will depend upon the knowledge and ability of the farmer as to whether he should attempt to remove the membranes by hand. Consideration must also be given to the cause of the retention—whether it is due to premature calving or abortion, or is due to debility in an aged animal in low condition which has calved at full time.

In the latter case it is comparatively easy to assist in the manual removal of the membranes by a careful examination and release of the membranes from the cotyledons to which they are attached. These cotyledons, or "roses," are fleshy prominences lining the womb and in such cases probably only one or two "roses" require to be freed to enable the membranes to be brought away in a simple operation.

In the case of an animal which has aborted it is frequently most difficult to release the membranes from the womb. This is partly due to inflammation and partly to the fact that the membranes would not normally be released until a later date. The forcible removal of the membranes in such a case may do considerable damage, cause haemorrhage, or allow the spread of infection throughout the system. In such cases it is advisable to leave the membranes for a few days, the cow being washed out with a warm antiseptic lotion, using plenty of fluid.

Advisory Service on Veterinary Matters.

Farmers are invited to submit inquiries connected with the health of their stock, and the replies will be published under this heading.

Warm antiseptic lotions injected into the womb assist the expulsive efforts of the organ and assist in preventing the danger of blood poisoning. It is common practice to give a cleansing drench to such animals in order to lessen the risk of constipation following the onset of fever.

The drench may be prepared by using from ½ lb. to ¾ lb. of Epsom or Glauber salts with two tablespoonfuls of ground ginger, the whole mixed in a quart of warm water in which 2 lbs. of molasses have been dissolved. The dose of molasses alone may be repeated in a few days.

In connection with this general question it is important to assist in the removal of all of the membranes while the entrance to the womb is still open. If a portion of the membrane is broken away, or a small portion is left behind, the latter may become imprisoned and set up a septic condition in the womb, which may persist for weeks or months. In such cases a periodic white purulent discharge is seen from time to time, and, quite naturally, such animals will not readily breed again until this has been cleaned up.

In many such cases, the use of lotions for washing out cows would be much more beneficial at calving time than when the breeding season arrives.

Dehorning a Heifer Calf

MRS. J. M. (HAMILTON):—

What is the best time to dehorn a dairy heifer calf, aged two weeks.

LIVESTOCK DIVISION:—

In the case of a young calf of this age it is advisable to try and prevent the horn growth rather than leave it until later, when the budding horn will require to be removed. The undeveloped horn bud can be felt as a small, round body loosely attached to the skin. It is advisable to clip the hair closely around each horn bud.

After dipping the caustic stick in water the top of the bud is thoroughly rubbed with the caustic, care being taken to prevent any caustic running down the face of the calf. This treatment may be repeated after a few days, when the horn growth should be arrested.

The caustic stick may be either caustic soda or caustic potash, and is obtainable from all chemists. During use the stick is wrapped in paper to protect the fingers.

If a horn bud has already formed it may be necessary to remove the bud with a sharp knife. After its removal, the application of the caustic stick will assist in stopping any bleeding and assure the destruction of the horn-growing tissue.

Cobaltised N-C-A Worm Drench
FOR THE TREATMENT OF *WORMS* IN SHEEP AND LAMBS
(Stomach, Intestinal, Tape and Wire Worms).
Contains Copper Sulphate (Bluestone), Nicotine-Sulphate, Arsenic and Cobalt combined in the correct proportions to act as a parasiticide. The medicinal dose of Arsenic also acts as a tonic. Cobalt has been found useful in small doses, especially in certain parts of N.Z.
Price 7/6 for 672 Lamb Doses.
Price 4/6 for 336 Lamb Doses.
Manufacturers:
TINGEY & HUBBARD LTD.
Chemists, FEILDING.

Farm Practice and Management

Contributed by Officers of the Fields Division

Wintered Pigs Are Profitable

MOST dairy farmers keep pigs in the summer and find that these animals offer a supplementary source of income to their cows, but few realise the amount of income they are sacrificing when they sell their weaners and store porkers in the autumn.

To get the maximum profits from pigs it is essential that farmers rear two litters a year. The first, or spring litter, will use the skim-milk or whey, and the second, or autumn litter, will use the tail-end of the milk, be carried over the winter on other feeds, and fattened on the first flush of spring milk.

It is unfortunate that most farmers fail to realise the value of the autumn litter. They adopt the practices either of starving this litter throughout the winter months, with resultant unthrifty pigs to finish off in the spring, or of selling their autumn litters as weaners or as store porkers. For these they get very poor prices, and have to buy in pigs of similar litters at a high price in the spring.

It is in these winter months, when farmers are short of by-products from the dairy, that pigs offer the greatest opportunity as profit-makers.

From early May until late July there is a continuous flow of store porkers and unfinished pigs coming into the saleyards, and these can be bought for from 7s 6d to 15s. These same pigs can be sold, not as prime pigs, but as bacon stores, in August at prices ranging from £2 to £2 15s.

Photo above—Typical pigs suitable for wintering.

If the store porkers are purchased in the autumn and fed on swedes, turnips, or on any root crop for that matter, plus half a pound of meat-meal per pig per day, they will cost the farmer an average of 5s per pig for the three months. The method used is to feed as much roots as the pigs will eat and meat-meal starting a ¼lb per pig, for the small pigs, and increasing this to ¾lb when pigs reach 100lb liveweight, giving an average of ½lb per pig per day.

In practice, it will be found that half a ton of roots will winter a pig for three months, and the value of these roots fed to pigs in this way works out at 96s per ton on last year's prices.

From these figures it will be seen that the key to profitable pig keeping lies in the cheap and efficient wintering of the autumn litter. On practically any farm it would be possible to grow half an acre of roots, and, as the average crop off this area is sufficient to carry five to six sows and their young through the winter, there does not appear to be a more economical or easier produced feed supply when used in association with concentrates.

—W. T. BROWN, Fields Instructor, Taumarunui.

Home-made Tractor Tender For Heavy Oil Fuel

A USEFUL heavy oil fuel tender has been designed by Mr. M. Spencer Bower, of Swannanoa, North Canterbury. The whole unit, lorry included, cost about 25s. The pump, which is the essential part, was taken from an obsolete type of petrol pump, as were most of the other fittings, at a cost of 10s.

The pump is capable of delivering half a gallon for each complete stroke, so that it is possible to measure accurately the amount of fuel pumped. For example, 88 complete strokes will empty a 44-gallon drum.

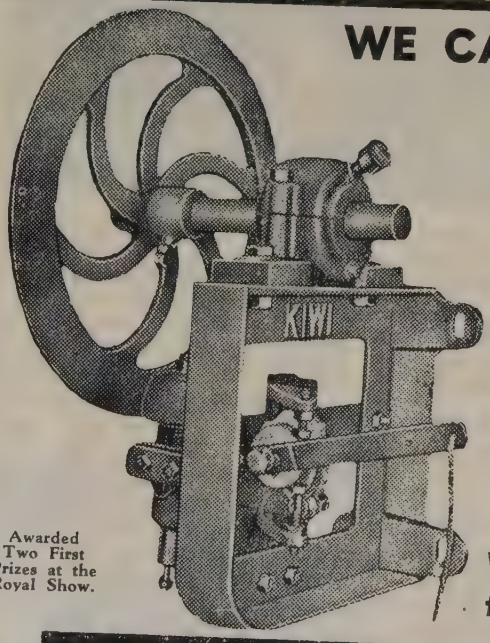
The pipe fittings used are clearly visible in the illustration, and consist, in the main, of 1¼in components. The delivery pipe rises to a height of 5ft above the top of the pump, while the suction pipe is 5ft 7in above the floor of the lorry. The flexible hose was obtained with the pump, and is standard. Flexibility in the pipes is effected by means of unions, as shown in the photograph. Sturdy bracing is also provided.

An interesting feature is found in the supports for the oil drum, which consist of angle iron. The support on the lower edge of the drum is used to prevent slip, and the other, which is mounted on an angular wood block, is 3in high and gives the drum the necessary tilt to ensure that the pump will suck up the maximum amount of oil.

To prevent the drum from rolling into the pump and to facilitate the revolving of the drum into the correct position, there is a wood block situated approximately 12in out from the elbow at the bottom of the suction pipe. The owner intends to fit suitable filters in the pipe lines at an early date.

Apart from carrying the pump and drums of fuel, the tender is used to convey other apparatus.

—J. A. S. MILLER, Instructor in Agriculture, Rangiora.



Awarded Two First Prizes at the Royal Show.

WE CAN SUPPLY YOU IMMEDIATELY
with any
"NEW KIWI"
SHEARING MACHINE

New Zealand's most popular shearing machines—the "New Kiwi"—are being manufactured at top speed to provide for your requirements. Enquire to-day regarding the various plants—we can guarantee immediate delivery.

Write to-day for full particulars.

M. J. HOOPER & CO., LTD.
90 FEDERAL STREET, AUCKLAND.

Farmer's Invention for Digging Surface Drains

Fig. 1.—A close-up view of the four revolving blades which cut the drain. *Fig. 2.*—The machine in action. Note the shower of fine fragments being scattered over the pasture.

THE problem of how to dispose of surface water on grassland is always exercising the minds of West Coast farmers, and Mr. V. Wall, of Koiterangi, has made a notable contribution to the means at the farmers' disposal for dealing with it.

He has invented and constructed a machine for digging surface drains effectively and cheaply. The operating mechanism of the machine consists of four blades on a carriage drawn behind a tractor and driven by a shaft from the power take-off at 500 revs. per minute. Fig. 1 gives an idea of the construction and mounting.

These revolving blades cut a channel about 18in. wide and 9in. deep at the centre as the tractor moves along, while the excavated turf and soil are scattered in a shower of fine fragments over the pasture to a distance of a chain or more. No soil, therefore, is left along the drain to be trampled in again by stock or to impede the passage of implements such as the mower or topdresser, while the resulting surface drain, clear cut and effective, need not be of such a depth as to interfere with farm operations.

The machine will dig about six miles of these surface drains per day, but the depth of the cut is variable, and it is possible to cut drains considerably deeper if required.

The paddock must, of course, be clear of stumps and stones, but at a demonstration near Kanieri (Fig. 2) the machine gave to a group of interested farmers a very convincing proof of its effectiveness, and it is likely to prove a boon on types of soil such as the Westland silt, where surface water is apt to lie for long periods.

—*A. D. MERCER, Fields Instructor, Greymouth.*

FOR FOOTROT & HARD QUARTERS
CAMFOSA DISINFECTANT
1/3 · 3/- · 11/6 & 22/6

HERE IS THE NEW IMPROVED SHEEP-BRANDING OIL
As Specified by the BRITISH WOOLLEN INDUSTRY'S ASSN.

Sayers SHEEP-BRANDING OIL . . .

PUT YOURSELF ON SIDE THIS SEASON, AND BUILD A VALUABLE REPUTATION FOR YOUR CLIP. USE THIS NEW, SCIENTIFICALLY PROCESSED, SHEEP-BRANDING OIL THAT SCOURS OUT COMPLETELY, GIVES YOU A CLIP TOTALLY FREE FROM DYE AND TAR, YET WITHSTANDS ANY EXPOSURE TO SUN AND RAIN. . . . SAYERS BRANDING OIL IS OBTAINABLE IN 3 STANDARD COLOURS: BLUE, RED, BLACK.

Agents everywhere . . . Write for full details to Sole N.Z. Distributors:
PREMIER PRODUCTS LTD., Huddart Parker Bldgs., WELLINGTON.

Agitating Mechanism of Home-made Topdresser

JUDGING by the inquiries which are still being received concerning the home-made topdresser described in the October number of the "Journal of Agriculture," many readers wishing to construct a similar machine have been somewhat puzzled by the working of the agitating mechanism. It is hoped that the accompanying illustrations may assist in explaining the layout more clearly.

Fig. 1 shows: "A" the length of 1-inch pipe which is coupled to the 1¼-inch pipe which takes the drive through the differential. It will be seen how the flange "B" is made to serve as a crank which operates the reciprocating rod "D" through the connecting rod "C."

The reciprocating rod, supported by brackets, is coupled by means of a portion of an old bicycle crank with the agitating chain, shown clearly in Fig. 2. Fig. 2 also shows the distributing holes—about half opened—in the regular plates.

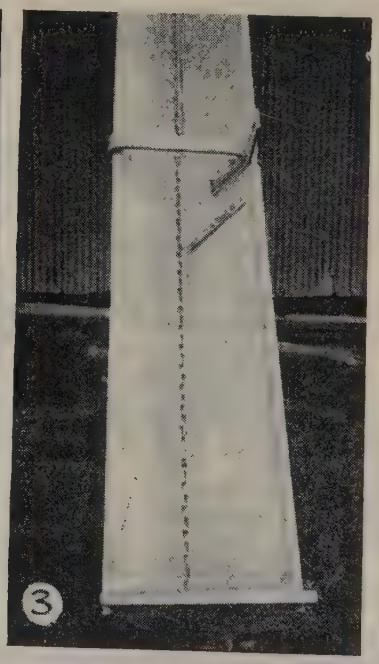
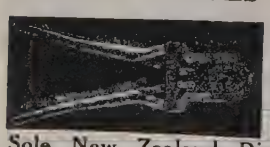


Fig. 3 shows the hopper and one of the reinforcing brackets by which it is secured to the tailboard pins of the cart.

The owner and maker, Mr. D. MacFarlane, has recently topdressed the greater portion of his farm with this home-made machine, and it has indeed done excellent work. Once loaded, it can very easily be operated by a schoolboy, as there is no heavy lifting entailed in filling up the hopper, and the machine will sow superphosphate and lime, separately or mixed, very efficiently and with equal facility.

—P. S. SYME, Instructor in Agriculture, Warkworth.

DEHORN CALVES THIS SAFE, HUMANE, MODERN WAY! *AND BE SURE OF BIGGER PROFITS*



. . . Avoid dangerous caustics and other primitive dehorning methods . INVEST NOW IN A—

STOCKAID CALF DEHORNER

—Universally recognised as the one really humane and efficient Dehorning Instrument.
Takes horns off below the skin and also removes the horn glands, making re-growth impossible.
Price £4/12/6. *Write for free descriptive literature.*

Sole New Zealand Distributors: PREMIER PRODUCTS LTD. - Huddart Parker Buildings, Wellington.

The Orchard and Vineyard

Contributed by the Horticulture Division

Orchard Notes

Preparation of Land for New Plantings

MANY failures have been brought about through: (a) inadequate shelter for the young trees; (b) insufficient preparation of the soil; and (c) purchasing an inferior type of tree. One cannot stress too strongly the necessity for thorough preparation of the soil, even if it means delaying planting for another year. Ploughing, breaking up the subsoil and a thorough working of the soil to a reasonable tilth is the least that can be done.

If shelter does not exist it should be planted preferably a year before the fruit trees. This will depend largely upon whether the position is very exposed or partly exposed. The selection of good trees is very important; therefore, hurried selection and planting should be avoided. Make arrangements beforehand with some reliable nurseryman to raise the trees you require, indicating the type of tree you need and the class of stock to be used.

If you have been taking stock, as was mentioned in last month's notes, you will possibly have discovered some errors or weakness in the previous practices. It may be that your implements and machinery are not up to date; therefore, consider these points:

Don't use a spade when you can use a plough.

Don't use a hoe where a cultivator of some kind can be made to do the work.

Don't use a hand pump or a knapsack when power plants can be obtained. Don't spray with a low pressure when a high pressure will give better results.

Don't use new and untested spraying materials because they have been offered to you cheap. Stick to the old and well-tried formulae and you should be successful.

Some Don'ts On Planting

Don't plant young orchards in exposed positions. Remember that young trees are like young children; they need protection. Strong winds are injurious, and prevent the young growth from coming away satisfactorily.

Don't plant the trees when the soil is wet, as there is every possibility

A five-year-old Cox Orange Pippin tree before and after pruning.

Seasonal Notes

Complete all pruning as early as possible, as other important seasonal work will soon be coming along.

Push on with the planting of fruit trees when the soil is in a suitable condition.

Spray all stone fruits with 5:4:50 Bordeaux mixture if it has not already been done. Most fungus diseases are easily prevented, but are somewhat difficult to control once they become established.

It may be necessary to spray pome fruits for the control of scales and red spider; if so, use one of the certified winter oils at 1-20.

Apply artificial manures if they are being used. All phosphatic and potash mixtures should be ploughed under, and it may even be advantageous to plough under the nitrogen as well.

If the weather conditions are favourable and the soil reasonably dry, some cultivation may be done, but on no account attempt this if the soil is at all wet.

that it will form into a hard mass as soon as the dry weather comes, and the trees will suffer.

Don't place artificial manures up against the roots; keep it a little distance away.

Don't use the Stringfellow system when planting; it has not proved a success in New Zealand.

Don't neglect to firm the soil well around the roots, leaving the top few inches of soil quite loose.

Don't plant carelessly; remember that you are expecting those trees to return you enough to repay all capital expenditure, and something besides.

Some Don'ts In Pruning

Don't be afraid to cut out crowded fruit spurs and buds, as they usually produce a large quantity of small and inferior fruit.

Don't leave heaps of prunings around the orchard; they should be burnt, as they may become a source of disease infection.

Don't allow the orchard to become a rubbish dump, but try and keep it reasonably clean and tidy.

Drainage of Surface Water

DURING the early spring some heavy falls of rain are likely to occur, and every provision should be made to allow the water to drain away quickly. Stagnant water, if allowed to remain lying about or around the trees at any time, is detrimental, but much more so during the start of root activity in the early spring.

—L. PAYNTER, District Supervisor, Auckland.

Citrus Notes

Choosing the Most Suitable Manures For Your Orchard

What are you going to apply to your citrus trees this spring as a fertiliser in order to maintain production of these health-giving fruits? What are the principles which will govern your choice?

NITROGEN is generally regarded as the limiting factor in successful citrus production. Therefore, let us judge the nitrogenous manures most generally available in orchard practice, judgment being based on the effect of the fertiliser on the tree and on the soil, and the cost of such fertiliser delivered at the orchard.

Nitrogenous manures, phospho-nitrogenous, or complete manures with an available percentage of nitrogen, can be grouped into: (1) The organic fertilisers formed as excreta of farm animals (horse, cow, sheep, pig, and fowl); (2) organic substances prepared as an animal by-product, such as blood and bone and fish manure; and (3) the purely inorganic nitrogenous manures prepared chemically, such a sulphate of ammonia and nitrate of soda.

Let us consider these manures in turn.

Blood and bone and fish manure are both phospho-nitrogenous, and their percentages of nitrogen and phosphoric acid insoluble in water are practically identical, being approximately 6 per cent. nitrogen and 12 per cent. phosphoric acid. These organic nitrogenous fertilisers are not readily soluble in water, but when well harrowed into the soil they form a steady supply of nitrogenous plant food, and there is little likelihood of the organic nitrogen being carried away by soil drainage.

The nitrogen of fish fertilisers is usually a little slower-acting than is the case with blood and bone; the oil retards the assimilation of phosphoric acid, but does no harm to the soil. As these are both organic compounds, the addition of these manures will be beneficial to the helpful soil bacteria, and they are known not to have any harmful effects on the soil.

Farmyard manures, being the excreta of the farm animals, are composed of a large percentage of water, ranging from 60 per cent. in fowl and sheep manures to 75 per cent. in pig and horse dung and 83 per cent. in cow dung. As all these manures contain phosphoric acid and potash in small quantities, they are of value as general manures. Their chief value, however, lies in their organic matter, which, through disintegration, increases the organic matter of the soil. This forms a store of plant food and also, especially on light soils, increases the water-holding capacity of the soil.

These farmyard manures may be placed in value in the following order for citrus trees:—Fowl, sheep, pig, horse, and cow manure. To take the case of fowl manure, an average percentage of the constituents is as follows:—Water, 60 per cent.; organic matter, 25 per cent.; nitrogen, 1.3 per cent.; phosphoric acid, 0.5 per cent.; potash, 0.6 per cent.; balance, 12.6 per cent. From these percentages it can be seen that in actual percentages of nitrogen and phosphoric acid these manures cannot be compared with blood and bone weight for weight, but if such manures are readily available by the fact that a poultry run or farm is close to the orchard and transport is therefore no difficulty, every opportunity should be taken to see that these bulky organic manures be used.

Sulphate of ammonia and nitrate of soda are two standard inorganic manures. The quantity of available nitrogen is 20 per cent. in the former and 16 per cent. in the latter. Sulphate of ammonia is used to the best purpose in soils well supplied with lime.

In those parts of the Dominion where high rainfall is experienced, sulphate of ammonia is not as readily leached from the soil as the quicker-acting nitrate of soda. The sulphate of ammonia is generally first converted into the nitrate by the soil bacteria and absorbed in this form by the root hairs. As these two fertilisers must be imported, their use at the present time is discouraged.

On the other hand, the utilisation of the natural local nitrogen resources—blood and bone, fish manure, and farmyard manure—needs to be emphasised. By the conservation of livestock manures the citrus orchardist will contribute to the national effort. During the present shortage of sulphate of ammonia, concentrate upon blood and bone, lime, and the ploughing-in of legumes, which should be the foundation practices of every commercial citrus grower.

—A. M. W. GREIG, Citriculturist, Auckland.

Viticulture

Downy-mildew of the Vine

LIKE powdery-mildew and several other vine fungi, downy-mildew (*Plasmopara viticola*) is indigenous to the United States of America. It has apparently always existed in the eastern States of America, where moist conditions usually prevail.

Downy-mildew was first found in France in 1878, and it quickly spread throughout Europe, and by 1881 had extended to Turkey, Algeria, and Russia. In South Africa it was first noticed in January, 1907. The first attack of downy-mildew in Australia was observed in the summer of 1916-17 in vineyards in the north of Victoria, and by 1921 the fungus had spread to all viticultural States. New Zealand was the last of the wine-producing countries to become infected, the first outbreak being recorded in the spring of 1925 in the Henderson district.

Of all diseases which attack the vine, downy-mildew is by far the most serious

Climatic Influence

Although it does not kill the vine outright, it can, because of its very rapid dissemination, completely ruin an entire grape crop within a few days.

The incidence of mildew varies in different districts and also from season to season, but without three or four sprayings no crop can be relied on, and in some cases ten or more sprays may be required.

The fungus develops under conditions of heat and humidity in the late spring or early summer, and is usually observed a few days after rain, fog, or dew, followed by a warm day.

Under favourable conditions outbreaks will recur throughout the season, and if not checked will destroy the whole crop and also jeopardise the crop of the following season.

Appearance of Disease

The fungus does not invade the ripened wood of the vine, and likewise does not infect ripe grapes or those approaching maturity, but all green parts of the vine are attacked. It is first noticed on the leaves in the form of dark, oily-looking patches, at first a light green, which gradually darkens. These patches are more or less circular, sometimes merging together.

On the lower surface of leaves the spots are not so much in evidence at first, but very soon, because of the formation of masses of fungous threads bearing spores, they present a downy, whitish appearance. The down is not usually seen on the upper surface of leaves, where it appears only alongside the veins. Down is characteristic, and easily distinguishes this disease from any other vine fungus; it is dense, glistens, and can easily be scraped off with the finger nail. The spots gradu-

SPRAYING MACHINERY *for applying*

ALL WASHES AND DUSTS, LIMEWASH, CREOSOTE AND DISINFECTANTS

There is the Right Machine for Every Job—Ask a Friend who is Using a VERMOREL Sprayer.

VERMOREL FLAME THROWER

This sprayer, which is used for Locust destruction and Weed and Scrub burning work, is simply and strongly constructed, and easy to use.

Brief Specification: Brass Alloy Tank, complete with 3 ft. Delivery Tubing and Special Flame-Throwing Lance. Weight complete 14 lb.

Made in two sizes:

1¼-gallon tank **115/-** complete.

5-gallon tank **132/-** complete.

Ex Warehouse, London.

All Types of Wet and Dry Sprayers Made and STOCKED.

Capacities from 2¼ pints to 220 gallons. Prices from 4/9 to £202 10s.

Complete Catalogue and List of Stockists in New Zealand from:—

COOPER, PEGLER & CO., LTD. **29e Clifton St., London, E.C.2**

ally become yellowish in colour, then brown, and finally dry out altogether.

In particularly dry weather the characteristic down does not develop; spots which appear dry up without producing spore-bearing filaments. In humid weather down is very apparent.

Downy-mildew is entirely different from powdery-mildew; the latter appears both on the upper and lower surfaces, and does not cause brown, dry spots

Its Effects

It is possible for mildew to reduce or destroy the crop in three different ways. If appearing early in the season about blossoming time, it will infect the young bunches and cause them to dry up and fall off. This infection has been known to destroy entire crops within a few days. Infection when the berries are at half-size or slightly larger can also be responsible for considerable loss. Once the berries begin to colour, however, the fungus is not able to penetrate the tissues, and the crop is safe.

Premature defoliation is the most common form of damage. Leaves which are badly infected fall off, and vines which have lost their foliage cannot ripen their fruit properly.

Grapes picked from vines infected with mildew make wine of very poor quality, fit only for distillation.

Not only is the current season's crop seriously injured, but severe infection jeopardises the chances of a good crop the following year. Premature falling of the leaves prevents the vine from storing up food reserves, so that few bunches are formed the following season.

A vine leaf affected with downy-mildew.

Life History

The following brief summary of the life history of this fungus is compiled mainly from the writings of some of the more recent investigators, principally from those of Messrs. Vialla, Ravaz, Gregory, and Verge.

The conidiophores—that is, the bush-like growth on the under-surface of the leaves—grow in groups of from four to ten through the stomata or breathing pores, the majority of which are on the underside of the leaf, and carry bunches of conidia or summer spores. When ripe, these fall on the leaves below or are wind-carried to the green portions of the other vines.

When conidia come in contact with moisture they break up into segments or zoospores, each of which has two cilia, which enable it to move about rapidly in water. When a stoma or breathing pore is reached the zoospore comes to rest and develops a germ tube, which penetrates by way of the stoma into the interior of the leaf or other organ of the vine. Germination of conidia under favourable conditions can take place in an hour, and the incubation period within the leaf ranges from five to 25 days, according to the climatic conditions, but generally about seven days. The oily-looking patches then appear, and fructification takes place if sufficient humidity is present in the atmosphere.

It is only during germination of the conidia or zoospores that the fungus can be checked. Once the germ tube has penetrated the tissues of the leaf, incubation and fructification cannot be prevented. It is evident from this that a fungicide must be there when the spores arrive if the disease is to be checked.

Should the germination proceed unchecked another crop of conidia or spores will, under humid conditions, be ready for dispersal in about seven days and so carry on the cycle, which repeats itself under favourable conditions to the end of the season. Dry climatic conditions hinder the progress of the disease, for to continue its life-cycle the fungus must have moisture.

—B. W. LINDEMAN, Vine and Wine Instructor, Te Kauwhata.

(To be continued).

Cool Storage Notes

Regular Inspection of Fruit

ALL lines of early-picked Granny Smith apples held in cool storage should be carefully examined from time to time as the season advances, especially if the fruit were immediately placed in cool storage, as this early-picked fruit is subject to the development of external discoloration, either while it is being held in cool storage or immediately after removal. In order to test the different lines a sample consisting of a few fruits from each line should be removed from the cool chamber and held for two or three days at ordinary atmospheric temperatures. By this method an indication can be obtained of the tendency of this variety to develop external discoloration in time to avoid deterioration and subsequent loss.

When Granny Smith apples are picked about the middle of April, held in orchard storage for from 10 to 20 days, and then wrapped in oil wraps and placed in cool storage at 32 to 34 deg. Fah., it is possible to control almost completely the development of external discoloration.

The condition of both Jonathan and Delicious varieties can be improved if these varieties are picked early, when they are well coloured, and immediately placed in cool storage. The firm condition of this early-picked fruit when immediately placed in cool storage and held at suitable temperatures will improve the quality, and because of its firmer condition a much longer useful cool storage life can be obtained. The Jonathan variety is more subject to early breakdown when the fruit is allowed to become too fully matured before being placed in cool storage.

A line of Jonathan apples picked on March 19 last and immediately placed in cool storage is now in a much firmer condition and of better quality than similar fruit from the same orchard which was picked on March 27 and April 3.

The early dessert varieties of apples should be picked when sufficiently coloured and in as firm a condition as practicable to obtain the best outturn with these fruits after they have been held in cool storage.

Delicious apples should also be picked when well coloured and in as firm a condition as practicable. They should be immediately placed in cool storage and held at a temperature of 32 to 34 deg. Fah. After a long period in cool storage this fruit will still be firm, and will hold up in good condition for a longer period after removal.

When allowed to become mealy either from over-maturity before being placed in cool storage or unsuitable cool storage temperatures, Delicious apples are very unsatisfactory from the consumer's point of view, as they have lost all the finer points of flavour and crispness which have made them such a popular dessert variety.

All lines of Sturmers should now be kept under observation in order to check up on any tendency of the fruit to deteriorate.

Vicar of Winkfield pears are subject to an external discoloration while being held in cool storage or immediately after removal. The discoloration generally begins to develop when the fruit is held after July. This tendency will be discovered if samples of the fruits are removed from the cool chambers and held at ordinary atmospheric temperatures for several days.

—A. POWELL, Cool Storage Officer, Wellington.

Retirement

Mr. J. C. Woodfin

AFTER completing 20 years' service with the Department of Agriculture, Mr. J. C. Woodfin, Vine and Wine Instructor, retired on superannuation recently. Mr. Woodfin was born at Rhuabon, North Wales, in 1870, and spent his early life in Chester, England. He worked in France, Belgium, Italy, Turkey, Spain, and the Canary Islands, and travelled in many other countries before coming to New Zealand. He had the distinction of serving in both the British and French military forces.

In October, 1920, he joined the staff of the New Zealand Department of Agriculture as Vine and Wine Instructor, and in April, 1932, he was transferred to the Te Kauwhata Horticultural Station to act in the treble capacity of vine and wine instructor, farm manager, and winemaker.

During the time Mr. Woodfin was with the Department he arranged for many hundred specimens of vines, both table and wine varieties, to be imported from France, Italy, and Central Europe and tested as to their suitability under New Zealand conditions. All the vines selected were the best grown in the country from which they were obtained.

Tobacco Notes

Preparation of Seedling Beds

GROWERS should now begin the construction of their seedling beds for the coming season. It is advisable to make an early start to allow for possible delays through adverse weather conditions.

Choose a plot of sunny, well-drained, sheltered, and sandy loam land close to water. Plough or hand-dig to a depth of 5 in. or 6 in. a sufficient area of this plot to form as many standard-sized seedling beds as will hold all the seedlings required for the season's planting. A standard-sized bed measures 4 ft. by 12 ft., and holds approximately 7,000 seedlings. Roughly shape as many beds of these dimensions as will be required, leaving a 2 ft. pathway at the sides and ends.

Treat each bed as follows:—Hoe and rake several times or until the soil is free of lumps and clods and of a fairly fine tilth; then cover with alternate layers of dry scrub and waste timber, such as old fencing material or drift wood, to a depth of 2 ft. Light from the leeward end of the bed and allow to burn off against the wind. It is important to obtain a thorough and efficient burn, for by this means two of the later and often most troublesome problems of seedling plant culture (weeds and insect pests) are practically eliminated.

As soon as the burn-off is completed and the bed cool enough, remove with a fine rake all big pieces of charcoal and rubbish remaining from the fire. Then board the sides and ends of the bed with 9 by 1 inch timber, using wooden pegs or stakes to keep the boards in place.

It is necessary to keep tobacco seedlings covered during the early stages of their growth to protect them from hail, frost, and wind. This may be done by several methods but the following will be found the most efficient:—

Drive a strong stake into the ground just outside and to the centre of the end boards of the bed, leaving 6 in. projecting above the edge. Strain a piece of light fencing wire from the top of one stake to the other, and stretch over this wire a strip of medium-quality hessian of sufficient length and width to cover the bed completely and overlap the side and end boards by 4 or 5 inches. Make all secure and taut by hitching the skirting of the hessian over the heads of the large tacks or nails previously placed for the purpose every 6 in. around the outside of the bed boards.

Hessian as a seed bed cover has several advantages over the calico used by many growers in New Zealand at the present time. Firstly, hessian-covered beds can be watered without the removal of the covers; secondly, seedlings grown under hessian are not so liable to damping off; and thirdly, the seedlings can be lifted and planted straight out in the fields without the three or four days hardening-off process so necessary to plants reared under calico.

On no account should the seedling beds be used for more than one season without sterilisation. If it is not possible to select a fresh site and form new beds each year, the old beds should be dismantled, and the soil loosened to a depth of six inches and treated by fire as previously mentioned. All material carried over from the previous season should be sprayed with formalin (40 per cent. formaldehyde) ½ gallon to 40 gallons of water before being used again.

—U. A. YELDHAM, Department of Agriculture, Wellington.

The Home Garden

Vegetables, Small Fruits and Flowers

Cultivation of the Kumera

THE kumara, or sweet potato, is an important vegetable crop that can be grown satisfactorily in the coastal and warmer districts of the North Island and in favoured localities in the South Island. Because of its susceptibility to frost and the long growing season required to mature satisfactory crops of tubers, it cannot be grown where frosts occur between November and April inclusive.

The crop is not difficult to grow. It is not subject to any serious disease in New Zealand, and may be grown on a wide range of soils provided they are adequately drained. The produce, if harvested and handled carefully and stored properly, may be drawn upon during the winter months when vegetables in the home garden are not in plentiful supply.

Preparation Of Soil

The most satisfactory yields are obtained on well-drained sandy loams of fair quality, and it is an advantage if they are not over-rich in humus. The soil need not be deep. Six to eight inches of fertile sandy loam overlying a porous clay produces the best results. Not all soils are of this type.

Heavy soils will need to be conditioned; otherwise they produce rough and unattractive kumaras, which, however, are quite suitable for culinary purposes. Deep sandy loams are not suitable because when these soils are deeply cultivated root penetration is too easy, with the result that swollen roots are produced, many of which are likely to be damaged during harvest.

Shallow cultivation from 3 in. to 4in. deep is sufficient before planting. When loosened the soil should be brought up to form ridges approximately 30 in. apart on which to set the plants.

Manures

Vigorous growth of kumara vines is generally an indication of over-manuring, and is frequently a sign of a poor crop. Such conditions occur when the ground is too fertile. If the previous crop has been well manured there is no need to apply any further manure for kumaras.

A sprouted tuber lifted from the nursery bed.

Where conditions are not fertile, however, a dressing of 4 parts of superphosphate and 1 part of sulphate of ammonia at the rate of 1 lb. to 30 ft. of row should be applied. This, if broadcast before the ridges are made, will be well mixed with the soil at the time of planting. It is advisable to plant as soon as possible after applying the manure.

Propagation

The tubers should be sprouted early so that plants will be available for setting out as soon as all likelihood of frost is past. In August selected tubers from the previous season's crop are bedded to the depth of 4 in. in a well-sheltered and sunny situation.

To ensure the early development of shoots a hot-bed should be made, for if conditions are too cold and wet the tubers are liable to decay. This bed may be made by placing decomposing stable manure, which should have been turned several times, to the depth of 12 in. to 18 in. in a frame. Cover this with 1 in. to 2 in. of light sandy loam, or preferably clean sand, which harbours less soil fungi and drains better. The bed is then left for five to seven days until the manure settles down and the temperature remains reasonably constant.

The tubers are then set close together, but not touching one another, and covered with more of this loam or sand. When this is completed the thickest portion of the tubers should be covered to the depth of about 1 in. It is then advisable to cover the bed with a glass sash or a sheet of calico supported at an angle to run off rain water. Watering of the bed should be done lightly, and it is safer to keep the bed rather on the dry side than too wet.

In four to five weeks' time the buds on the tubers will have sprouted and will be appearing above the surface of the bed. So that sturdy plants will be produced, as much light as possible should then be given. When the shoots are 4 in. to 6 in. high they should be removed. If pulled sideways and

HOME-GROWN VEGETABLES.

All home gardeners should make every endeavour to grow sufficient vegetables for their own use throughout the year, especially during the present conflict.

The period April to October, when fresh vegetables may be in short supply in the garden, is one when long-standing vegetables such as artichokes, swedes, leeks, parsnips, silver beet, winter and savoy cabbages, kale, broccoli, etc., should be available. In addition, properly harvested and stored crops will be found most useful at this period. In this category are beetroot, carrots, kumaras, onions, potatoes, pumpkins and marrows. None of these crops is difficult to grow.

Notes on the planting, cultivation, harvesting and storage of all the crops mentioned are given in the seasonal horticultural notes of the "Journal."

What To Do In The Garden Next Month

Summary of Operations During September

VEGETABLE SECTION.

SOWINGS UNDER GLASS.

Capsicum, celery, celeriac, cucumber, egg plant, melon, marrow.

SUCCESSIONAL SOWINGS.

Lettuce, radish, spinach (round seeded), spring onions, turnip.

OTHER SOWINGS.

Peas (if they were not sown last month see last month's notes), Brussel's sprouts, beetroot (globe varieties, and at the end of the month maincrop long varieties), carrot (shorthorn varieties, and at the end of the month maincrop of intermediate and long varieties), cauliflower, leek, parsnip (it is advisable to plant a portion of the requirements this month or next and the remainder in December).

SEEDLINGS TO TRANSPLANT AND PLANTS TO SET.

Cabbage, lettuce, artichokes (set tubers), potatoes (main crop—see paragraph in these notes).

PERENNIAL CROPS

Asparagus.—Sow seed and transplant seedlings. Herbs.—Break up and replant herbs.

SPECIAL NOTES FOR WARM DISTRICTS.

Sow dwarf and runner beans and a quick-maturing pumpkin. (Red Warren).

CROPS IN SEASON.

(The month in brackets represents the month of sowing the seed).

Salads.—Endive (Mar.), celery (Sept.), lettuce (May, in warm districts).

Greens.—Asparagus (from the middle of the month), broccoli, savoy cabbage and silver beet (Oct.), cauliflower (Mar.), spring cabbage (Feb.), peas, (May, at the end of the month in warm districts).

Roots in the Ground.—Beetroot (Mar., globe varieties in warm districts), carrots (Feb., Mar., shorthorns), celeriac (Sept.), leeks (Oct.), parsnips (Sept. and Dec.), potatoes (May in frost-free districts; dig when large enough to use), turnips (July).

CROPS IN STORE.

Beetroot, kumaras, onions, pumpkins and shallots.

GENERAL WORK.

Cultivate ground that is soon to be planted to free it of weeds and to produce a suitable seed bed, and cultivate that which has been planted.

Earth up early potatoes.

Give July-August transplanted onions a dressing of nitrate of soda or sulphate of ammonia ($\frac{1}{2}$ oz. to 9 ft. of row).

Dig up roots which have been in the ground over the winter and store them in a cool place. This should be done when the crops show signs of regrowth. After digging, they should be used as soon as possible, as they do not keep well when taken up.

SMALL FRUITS SECTION.

Raspberries, Loganberries, etc.—One month after the bud movement spraying for cane wilt and leaf spot; repeat with Bordeaux 3-4-50.

FLOWER SECTION.

Plant gladioli corms, but leave some for later planting to produce a succession of bloom.

Complete the planting of tender shrubs and those which are difficult to transplant this month.

Complete sowings of seeds to produce seedlings for late spring and summer bedding. Prick seedlings into seed boxes when large enough to handle, and give them plenty of light so that strong plants will be produced. Take cuttings from sprouted dahlia tubers.

GLASSHOUSE SECTION.

The planting of tomatoes in the unheated house should be completed early this month.

Keep the surface of the ground cultivated, and do not apply water except when the plants really need it, and then give a thorough drenching early in the morning of a bright day.

Fix supports for the plants. Binder twine suspended from wires and attached to the base of the plants is the most satisfactory support.

---

carefully taken from the tubers, sufficient roots will be taken with each shoot to maintain it.

These sets may then be planted out if danger of frosts is past, but better plants are produced and better crops obtained if they are heeled in close together in a sheltered situation and allowed to grow on. Plants which will transplant more readily are produced, and while growing in the bed they can be protected from late frosts.

The tubers from which the first crop of shoots has been taken will produce a second and a third crop of shoots. When removing the final crop of shoots the tubers may be lifted. They then appear as shown in the illustration.

As an alternative to the use of a hot-bed, the tubers may be set in a cold frame of sandy loam or sand and treated as described for a hot-bed. The development of shoots by this method, however, is slower, and finds favour only with growers in warm districts. By using a hot-bed shoots should be ready six weeks after setting the tubers. The cold frame will take two to three weeks longer.

Planting

Planting is best done in November on ridges 30 in. apart, allowing 18 in. between plants. The point from which the roots are produced should be placed 2 in. deep, and so that this may be accomplished with long plants some form of bending is usually desirable, as only 3 in. or 4 in. of plant should show above ground. Loose knots may even be tied in such plants. After planting, the soil about the plant should be firmed.

Attention After Planting

In November the soil usually contains sufficient moisture to ensure rapid establishment. During the summer water is seldom, if ever, required, as the established plant stands drought fairly well. Weeds should be kept in control at all times.

When the trailing varieties are grown the vines require an occasional lifting from the ground to prevent their

rotting at the nodes. The handle of the hoe when pushed along the sides of the row does this operation quite efficiently.

Varieties

In New Zealand the main kumara variety grown is the Tauranga Red. It is a trailing variety which, under suitable conditions, produces tubers of the desired type. A similar variety, but one not so popular with the market, is the Tauranga Yellow.

A number of varieties have recently been imported, and are being tested under New Zealand conditions. When these trials are completed stocks can be made available of the varieties found to be most suitable.

A note on harvesting and storage will be given in the March issue of the "Journal."

—F. SYDENHAM, Assistant Horticulturist, Wellington.

Planting the Maincrop Potatoes

THE soil should be in suitable condition to plant the main crop of potatoes this month or during October. Deep cultivation is necessary before planting. The surface of the ground may be left rough, as seed bed conditions are not required.

During the final preparation of the land the tubers may be set in furrows or trenches 27 to 30 in. apart as the work of cultivation proceeds. Artificial fertiliser should be distributed along the bottom of these furrows and mixed with the soil.

The most suitable mixture consists of 3 parts of superphosphate and 1 part of sulphate of ammonia. Applications of 4 to 5 cwt. of this mixture to the acre on light land and 6 to 7 cwt. on heavy land give the best results. Where the rows are spaced 30in. apart 1 lb. of the mixture is required for 30 to 40 ft. of row on light soil and 20 to 26 ft. on heavy soil.

Where 1 cwt. of sulphate of potash is applied, as is advisable on light land, 1 lb. (additional to the above mixture) will be sufficient for 150 ft. of row. After the dressing of manure the tubers should be set 3 to 4 in. deep and 15 to 18 in. apart and covered.

Aucklander Short Top (Sutton's Supreme) is a variety which can be advised for practically all conditions. The seed of this variety should be planted whole, as it is liable to rot when cut. There is no need to sprout the seed for the main crop.

Seasonal Don'ts

Don't

sow seeds thickly. It involves both a waste of seed and of labour in thinning the seedlings. When overcrowded, the seedlings are much inferior to those produced when allowed more space.

Don't

sow old seed of doubtful germination; it is a waste of time. It may be thought that, by sowing a little thicker than usual to make up for reduced germination, a successful "strike" might be obtained. Old seed, however, loses not only in ability to germinate, but in vitality of the seedlings produced, so that they may not be as robust as those produced from fresh seed. Seed is cheap, and a few shillings spent on fresh seed each season returns handsome dividends.

Don't

gamble with uncertified potato seed; the risks are too great. Certified seed is true to type, is reasonably free from tuber-borne diseases, and when planted under favourable conditions should yield satisfactory crops. Uncertified seed cannot be relied upon, and the few shillings difference in price cannot justify the risks involved.

Answers to Correspondents

Storing Marrows

SISTERS OF COMPASSION (WANGANUI RIVER)—

In a recent issue of the "Journal of Agriculture" you tell us to cut marrows as soon as they are the required size. I would be grateful if you would let us know if they are to be left outside to ripen, or should they be stored under cover at once, as soon as cut?

Please let us know also if frosts are harmful or otherwise to growing pumpkins.

HORTICULTURE DIVISION:—

In the notes you refer to the marrows are cut while the skin is soft and when they reach a suitable size for use as a summer vegetable. At this stage they will not keep, and should be used as soon as possible. The marrows may, however, be left on the plants till they ripen, and are treated then in the same manner as pumpkins.

Both pumpkins and marrows are mature when they have completed their growth and the skin has firmed. They should then be cut from the vines, leaving the short, thick stem attached, and should be left undisturbed for several days so that the skin may harden off completely before they are taken up and carted to the store. If they are mature a slight frost at this stage will not harm them, providing they have not been disturbed. That portion which has been in contact with the ground is tender through not being exposed to the air and may be damaged by frost.

Immature pumpkins will be injured if frosted, and even if placed into store before this occurred they would not keep well. Hard-skinned varieties, such as Ironbark pumpkins and cattle marrows (kumi kumis), will stand quite heavy frosts if properly mature.

Both pumpkins and marrows should be stored. A cool, dry, ventilated shed is the most suitable place, but they may be stored quite satisfactorily if stacked under dense trees, such as macrocarpas, where frost does not penetrate and where they will remain reasonably dry.

APIARY NOTES

Contributed by Officers of the Horticulture Division

Seasonal Conditions in the Apiary

GENERALLY speaking, the seasons are two to three weeks earlier in the northern portion of New Zealand, and seasonal conditions vary to a remarkable extent even between adjoining counties, so much so that it is not always easy to stock the hives with abundance of young bees by the time the main honey flow begins, which is essential for the production of good surplus crops.

The bees in cultivated areas in the north usually become active during August, taking advantage of fine days to work all early fruit sources and pussy willows, to be followed by a variety of sources at intervals according to weather conditions.

Brood-rearing

As the season progresses the bees use up great quantities of stored honey and usually all fresh nectar gathered from the fields for brood-rearing purposes, thus building up a large force of young bees in time for the main honey flow to come. About the end of October each year, according to location and climatic conditions, there begins a critical period which lasts to about the end of November.

Over this period there are no nectar-secreting plants or trees in bloom away from bush areas of any importance to the bees. Consequently, reserve stores must be fed out or artificial feeding resorted to in all cases where the bees are low in stores. A disastrous check to brood-rearing will take place at this time if these precautions are not taken.

Reasons for Crop Failures

The reason why so many hives throughout New Zealand do not produce fair average crops of honey is because the bees lacked attention and food; consequently they do not build up early enough to take advantage of the main honey flow. Under these conditions it becomes necessary for them to build up in numbers at a period when they should be at full strength and storing surpluses.

Bee-keepers should provide the bees with just sufficient room for the expansion of the brood nest and with steady stimulative feeding whenever necessary until the start of the main honey flow.

Early Spring Examination

The first examination of the hives following the winter months and after the start of brood-rearing should be for the purpose of checking over the food supply.

Not less than 20lb of honey will be needed at the end of August to carry the bees safely through the spring months, in addition to the nectar gathered from all sources at intervals right up to the end of November, according to the locality. If bad weather conditions prevent the bees from working the willows, barberry, fruit, and other spring sources, feeding must be resorted to.

While the expert can judge fairly accurately the amount of food supply by tilting the hive forward by hand, the average bee-keeper should make a quick examination of the combs.

Feeding

Where frames of honey have been set aside for feeding purposes, the feeding of additional stores will be simple. Even so, feeding should be done in a manner least likely to disturb the bees, and by feeding in the late afternoon or evening the dangers of robbing are avoided.

Either honey or artificial feeding excites the robbing instinct. Therefore, the entrances to all hives should be reduced to small dimensions, and care taken to see that outside bees cannot secure the slightest taste of feed, for once robbing has started it is very difficult to control.

Liquid Feeding

When combs of honey are not available, sugar syrup is a good substitute, and may be fed to the bees about equal parts of sugar and water at this time of the year. If the colonies are not very strong in bees and are nearly bare of stores, a stronger solution of two parts of sugar to one of water should be given.

It is not good practice to feed more syrup than the bees are able to take up and store over-night. Any carry-over in the feeders causes undesirable activity and attracts the attention of robbers, often with fatal results to the colonies being fed.

Mats

All damp or ragged mats should now be replaced with clean, dry mats, and the bees made as comfortable as possible. Flax mats cut to size can be bought cheaply, or good mats can be made from clean corn sacks or sugar bags. These should be cut to fit the inside top of the hives and placed neatly down on top of the frames.

Queens

Bees are much the same as all forms of animal life. The cause of difference in strains of bees is heredity, the biological law by which living beings tend to reproduce themselves in their descendants. Therefore, bee-keepers should breed from quiet strains, taking into consideration their capacity for work. It is well known that no two individuals of any race of animal or even plant life are exactly alike, and this, also, applies to bees.

While it is yet too early to begin queen-rearing for the new season, bee-keepers would be well advised to check over the performance of individual

(*Continued on page 146*).

Notes for the Poultry Farmer

Contributed by Officers of the Livestock Division

Brooding and Rearing of Chickens

WORK for the following month on all poultry farms is mainly the brooding and rearing of chickens. This is highly specialised, and entails a fair amount of labour and attention to details. The small details connected with the brooding of chickens are just as important as the larger ones, and it is only by paying particular attention to all details that success can be achieved.

Transference To Brooder

When removing chicks from the incubator care should be taken that they do not get a chill. They should be well covered up and kept warm. The best time to do this job is at night. In the daytime the poultry-keeper will find difficulty in keeping the chicks under the brooder, which is essential for the first twelve hours to ensure that they do not get a chill. When the job is done at night the chicks will settle down under the brooder, and will thus be kept warm for the first few hours.

Temperature Of Brooders

The temperature which should be maintained under the brooders varies according to the age of the chicks. At the start of brooding the temperature should be not less than 90 deg. at the edge of the hover on a level with the chickens' backs. This, of course, refers to the canopy brooders, which are most generally used. With the other types of brooders the temperature should be the same all over the brooder. The temperature should not be reduced for the first week or ten days, but from then onwards the hardening-off process should be started by the gradual reduction of the temperature. With the canopy brooders it is a good plan to raise the height of the brooder a little every other day to effect this result.

While the experienced man seldom uses a thermometer, it is a wise plan for the beginner to do so until he has enough experience to be able to tell by the look of the chicks whether they have sufficient heat. Provided the chicks can move away from the heat, it is better to have the brooder a little too hot rather than at just the correct temperature.

Training the Chicks

Training is essential, because if it is neglected the chicks can very easily get chilled. For the first two days the chicks should be confined to the brooder by a frame of some sort, which should be placed not more than 12 in. from the edge of the hover.

A good frame can be made of strips of galvanised iron approximately 15 or 18 in. wide so that the width between the iron and the hover is the same all round. If these strips are made about 5 to 6 feet long they can be clamped together by clothes pegs or else 4 in. nails which have been bent in the form of a U. No matter what the age of the chicks may be, one of these strips of iron should be kept in front of the brooder at all times to prevent any draughts from penetrating underneath. Some people use frames of wood, but a disadvantage is that the width between the frame and the hover may be 12 in. in one place and possibly 24 in. at the corners.

After the first two days the space allowed the chicks should be gradually increased, until they have the run of the house in seven days. Provided the run allowed is increased in this way, there should be no trouble in teaching the chicks where to go for a "warm up," which they require every now and then during the day. It is as much a disadvantage to keep the chicks confined too long as to give them too much run too quickly, and it is only by working to a happy medium that the best results can be obtained.

Guard Against Dampness

Much success has been achieved during the last few years by the use

"THE PINES" Poultry Farm
Offer the Best in
WHITE LEGHORNS
(100 per cent. N.Z. Government, Wallaceville.)
TEN-WEEK-OLD PULLETS - - - - **6/-** Each.
Book your requirements early this season.
Write NOW to
J. A. TAYLOR, "The Pines," Main Rd., Heretaunga.
Telephone: Upper Hutt 60.

of wire-netting frames under the brooders. These frames are made of 3 in. x 1 in. timber with wire-netting stretched tightly across, the timber being put together so that the wire-netting is 3 in. off the floor. Over this are placed sacks which have been opened out down the seams, and the litter is then placed on top of that again.

This method keeps the chicks well off the floor, and there is also less dampness than with any other method. Whatever type of litter is used, it should be from 1 in. to 2 in. deep. For the first week it should not be necessary to change the litter, but after that the bedding should be changed every day to ensure that there is no dampness under the brooder.

Care at Dusk

The person looking after the chicks should pay them every attention just at the time they are beginning to settle down under the brooder. After the first week it will be necessary to watch the chicks closely and to spread them out round the brooder. Unless this is done the chicks will camp in a heap at one side, and while some of them will be too hot, others will be too cold.

Cleanliness

One of the most important points in rearing chicks is cleanliness. Before a fresh batch of chicks is placed under a brooder all the drinking fountains, grit boxes, feeding trays, or hoppers should be thoroughly scrubbed with hot water and a good strong disinfectant. The drinking fountains should also be cleaned every day, and the feeding trays whenever necessary, particularly when milk is given; otherwise the drinking fountains will become mouldy and begin to smell. It is advisable to place all drinking equipment on platforms to prevent the surrounding litter from becoming damp.

Grading of Chicks

By the time the chicks are three weeks old they will have become very uneven in size, some having grown better than others. The larger birds should be taken out and placed on their own, thus giving the smaller chicks a better chance to grow into big, strong birds.

There will always be a certain number of weedy chicks in any batch, but neglect to do this grading will result in a larger number of weedy chicks than would otherwise be the case. Failure to grade the chicks probably has more to do with the lack of size in pullets reared on many of the poultry farms than any other point, with the exception of the size of the birds in the breeding pen.

Feeding

The feeding of chicks from the day-old age must be given full attention,

RAISE YOUR STANDARD OF EGG-PRODUCTION!

Join the KARSWOOD Victory Corps

BATTLE-CRY:-

5 Eggs a Week from every layer

(and not an EGG less)

Britain wants eggs—URGENTLY—in the greatest quantities we can supply. The loss of enormous supplies from Denmark, Holland, Belgium, Poland, has left her desperately short of this essential item of National food.

Are YOU doing everything in your power to help? Are you firmly convinced your hens are laying **every** egg of which they are capable? If in the slightest doubt, put them on the daily ration of Karswood Poultry Spice NOW and **make certain** that every extra egg that can be laid **will** be laid.

Such a valuable aid to egg production must surely be costly, you may say. Far from it! In actual use Karswood Poultry Spice costs only one-fifth of a farthing per hen per day—an insignificant outlay which is repaid **MANY** times over in the extra yield produced. Whilst in addition it is the finest poultry conditioner known to science; is perfectly harmless and SAFE to use. *Go to it!* Set a standard of 5 eggs weekly from every layer; benefit yourself, your hens and serve a vital need of the Empire!

A NATIONAL SERVICE

1/- packet supplies 20 hens for 16 days; 2/- packet 40 hens for 16 days; 7 lb. tin (12/6) 280 hens for 16 days. All Wholesalers and Stores stock Karswood.

KARSWOOD POULTRY SPICE

Increases egg-production without forcing, because it contains ground insects, but no cayenne pepper, &c.

as no chicks, no matter how well they are looked after otherwise, will grow and do well if they are not fed properly. Different methods of feeding are used all over the Dominion, and many give satisfactory results, but there are some methods which do not allow the chicks the best chance to do well.

In the majority of the districts there is ample sunlight, but in the far south, particularly in Southland, there is a definite lack of sunlight, and it is a good plan in such cases to include cod-liver oil in the chicks' diet to make up for this deficiency.

The following method of feeding chicks from the day-old age right through the growing stage and the laying season has been used with success at the Government Poultry Farm at Wallaceville.

Chicks in Brooder.—Chicks are transferred from the incubators to the brooders at night.

First Meal.—On the following morning, usually about 48 hours after hatching, they are given their first meal. This consists of a grain mixture, which is fed during the first seven days, and is made up as follows:—

Finely-cracked wheat	75 lb.
Finely-cracked maize	25 lb.
Total	100 lb.

This mixture is apportioned out daily in suitable quantities according to the number of chicks to be fed and how they are eating. For the first two days the chicks are fed every two hours, or until they are eating well, after which three meals per day are given, the first at 7.30 a.m., the second at 11.30 a.m., and the evening meal at 4.30 p.m.

The quantity of the mixture to be given for each meal is first prepared by being soaked in water about an hour before feeding time. The grains are allowed to absorb just sufficient moisture to cause them to swell.

Grit.—A little finely-cracked oyster-shell grit is mixed with their feed from the first day until about the eighth day. From then on, finely-cracked oyster-shell grit is placed in open hoppers or boxes to which the chicks have free access at all times.

Water and Milk.—At the same time as the first meal is given the chicks are provided with water to drink. When the chicks are four days old fresh or skim-milk is provided.

Water is not provided while milk is being supplied, the milk being given alone as a drink until the chicks are old enough to go away from the heat. Generally, this is when they are from six to eight weeks old, according to weather conditions. After the chicks have been transferred from the brooder to colony houses water is always kept within easy reach, but milk is continued as long as an ample supply is available.

Green Food.—On the fourth day green food—finely cut up silver beet and young green oats—is fed along with the other rations. When it is seen that the chicks are consuming the green food a regular supply is provided and is fed separately, between meal hours, at 9 a.m., 2 p.m., and again after the last meal at 5 p.m.

Mash.—Beginning on the eighth day after hatching the chicks are given two mash meals and one meal of grain per day. The grain mixture remains the same as during the first week, but the grains are a little larger each week, according to the development of the birds.

The mash mixture consists of 1 measure of wheat-meal to 1 measure of bran. This is moistened with sour milk, and every care is taken to mix it as crumbly as possible and not too pasty or sloppy. If milk is not available, 2 per cent. of meat-meal is included in the mash ration from the eighth day, and the mash is moistened with water.

No material change is then made in the diet until the age of eight weeks. At this stage, provided the chicks have done well, they should be big enough to be given whole grains, with the exception of maize, which is a little too large.

Young Stock (from 8 weeks).—The following are the grain and mash mixtures fed from the age of eight weeks until the birds are approximately six months old:—

Grain Mixture.—4 parts wheat, 2 parts shelled oats, 1 part kibbled maize.

Mash mixture: 2 parts wheatmeal, 1 part pollard, 3 parts bran.

Sometimes it is seen, however, that at the age of three and a half to four months the chicks are maturing too quickly. To check this the milk is eliminated from the mash mixture and as a drink, water being substituted. Further, it is sometimes necessary to eliminate the mash itself as well as the milk, and to feed only grains until the birds are well developed.

Adult Birds.—When the young birds have reached maturity (about six months) they are given the same rations as the adult birds, which are as follows:—

Mash Mixture.—4 parts pollard, 2 parts bran, plus 5 per cent. to 12 per cent. meat-meal according to the season and to how the birds are laying. Grain mixture: 2 parts barley, 6 parts wheat, 2 to 3 parts kibbled maize, according to the season of the year (2 parts in summer and 3 parts in winter).

From this stage (six months old) and during the laying period the birds are fed once daily with mash and once daily with grain. The mash is fed between 6 a.m. and 7 a.m., and is moistened with steamed lucerne when green feed is not available. Grain is always fed at the evening meal, generally between 3.30 p.m. and 4 p.m. Green food, consisting of chaffed-up silver beet and young green oats, is fed once daily after the evening meal, usually at about 4.15 p.m. Gravel grit and oyster-shell grit are always before the birds, as is also fresh clean water, thus allowing them to consume as much of these materials as they require.

APIARY NOTES — *Continued from Page 143*

colonies in the apiary with a view to selecting suitable queens for breeding purposes this coming season.

Most Desirable Race

The mere fact that a colony has given a large yield of honey does not prove that the queen that produced the bees is the most desirable one from which to breed.

It has long been recognised that the most suitable race of bees for New Zealand conditions is the Italian. Not only are they good honey gatherers, but they also have many other desirable traits, such as quiet action on the combs, hive cleanliness, and a reduced swarming tendency. Further, they are good hive defenders, will not tolerate wax-moth in the hives, and with ordinary care will winter well.

Temperament

Good temperament and quietness on the combs are essential qualities for safe wintering, for with it comes the least consumption of stores and exhausted vitality, all of which are so necessary if the bees are to be in good condition for successful brood-rearing during the spring and early summer months.

It is well, therefore, to note now the colonies which have wintered well as a preliminary to final selection of breeding queens for use from September onwards.

Queen-rearing

Queen-rearing will be dealt with in next month's apiary notes. In the meantime, all bee-keepers who for various reasons are unable to raise their own queens should place their orders now with reliable queen-breeders for young laying queens for delivery from September onwards.

—T. S. WINTER, Senior Apiary Instructor, Wellington.

N.Z. Federation of Young Farmers' Clubs

Edited by S. Freeman, Dominion Organizing Secretary

President's Annual Report

Continued Progress of Federation In Spite of War

Sixth annual report, presented at the annual general meeting of the N.Z. Federation of Young Farmers' Clubs in Christchurch on July 24, 1940, by the president, Pilot Officer E. W. Barnett.

THE past year has been notable in the history of our organisation, not for any outstanding development that has taken place, but for the fact that a continued forward movement has been in evidence in the face of the very many difficulties which have arisen with the advent of the war. Such continued progress is a striking tribute to the keenness and enthusiasm of executive officers and members of the various sections of our organisation, and illustrates forcibly the stability of the Y.F.C. movement and the regard in which it is held by members.

During the period under review there has been somewhat of a reshuffle among a number of clubs in various districts, in that in many cases it has been found that they could operate more efficiently by amalgamating. This is evidenced by the number of clubs formed during the year and the number disbanded, taken in comparison with the total Dominion membership figures. There were 12 new clubs formed and 10 disbanded during the year, at one stage there being 212 clubs in existence, while the present numbers stands at 203—two more than at last year's annual meeting, and 40 more than in 1937-38. There has been a marked increase in the membership of individual clubs, a fact reflected in the total Dominion membership, which has risen during the year from 5,000 to more than 6,000. In addition, there are about 1,000 honorary and advisory members.

Pilot Officer E. W. Barnett, who has been re-elected president for the second year in succession.

Number of Clubs

The figures of the number of clubs in each council area for the past three years will probably be of interest:—

	1937-38.	1938-39.	1939-40.
Otago-Southland	33	35	35
Canterbury ..	34	40	38
Wellington ..	63	80	77
Auckland ..	30	46	53
	160	201	203

Since the inception of the Young Farmers' Club movement in New Zealand the work and enthusiasm of members have contributed towards a closer co-operation between the younger members of our farming community, the increasing of their knowledge of agricultural science and practice, and the developing of further opportunities for social activities. Today, however, our work and enthusiasm must be diverted rather towards rendering to our country and to our Empire some practical assistance in the conduct of the war.

The Empire today needs above all else two things, men and produce, and our movement can be of definite assistance in the provision of both. It is estimated that already 600 or 700, or possibly more, of our members have enlisted in the fighting services, and so have assisted materially by answering the call for men; but to many of our members will fall the more everyday, but none the less important, task of maintaining and increasing primary production.

Whichever of these two methods of rendering service should fall to their lot, I would appeal to each and every one to remain steadfast, and to strive to do their utmost in whichever sphere it may be. In such manner will the war be won—not alone by strength of armies or weight of numbers, but by the spirit in which each one of us works or fights.

Those who are already, or will be, members of the fighting forces can have no doubt as to their particular job and how to do it; the issue for them is clear-cut. To those whose job it is, and will be, to carry on at the "home front," I would suggest that it should be their proud privilege to ensure that the vital supplies of foodstuffs and produce do not fail. To

them falls the task of seeking through their clubs how this may be done—and then going back to the farm and doing it.

The Clubs

Clubs generally have maintained their many and varied activities during the year, although of late months there has of necessity been some curtailment of the less essential operations, a principle which has been adopted latterly in view of the war situation by all sections of the movement.

Club meetings have been made interesting and instructive by the holding of debates, lectures, and discussions on many subjects. A number of clubs have held field days at which demonstrations, stock judging, and farm activity competitions, such as tractor-driving, ploughing, fencing, etc., have been of particular interest. Such activities are of inestimable value to the Young Farmer by helping him to increase his knowledge and efficiency.

During the earlier part of the year most clubs have indulged in many social activities, such as dances, card evenings, and athletic meetings, etc., but, as previously indicated, these have been somewhat curtailed of late.

Districts

District committees have in many respects been more active during the past year than previously, and, in addition to meetings, field days, and tours, etc., which were hitherto their main activities, have held district stock judging competitions, dog trials, athletic meetings, inter-club debates, and many other contests of a valuable nature.

Councils

There has been a far greater extension of the various council operations and activities during the year than in any other section, due doubtless to the fact that formerly the councils were only feeling their way and were not sure of the part they were to play in the organisation. They have, however, now proved that they have very important duties to perform, and that they can, and will, carry them out. Among councils' activities have been inter-district judging competitions, debates, educational weeks, athletic meetings, ploughing matches, shearing contests, show exhibits, etc.

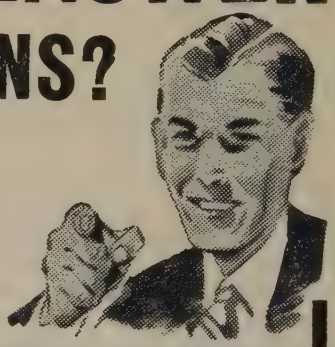
National Activities

National activities have included the National Stock Judging Competitions, the National Debating Contest, and the National Centennial Tree Planting Scheme. It has become very apparent during the year, particularly in relation to the holding and implementing of national activities, that a very important part is played by the councils and district committees in providing the necessary link between the clubs and the federation itself. The existence of these bodies has made it possible to undertake efficiently elimination contests in the various activities, and thus, with the greatest economy of procedure, carry them out on a truly national scale.

The National Stock Judging Competitions were held at the Royal Show, Invercargill, in December. This activity was undertaken by the Otago-Southland Council, and to that body must be given much of the credit for its undoubted success. The competitions covered various classes of stock, Southdown and Romney sheep, dairy and beef cattle, Clydesdale horses, and baconer pigs. Sixteen teams competed in the teams contest, and there were 220 individual entries from 105 members, who travelled from various parts of the Dominion to compete.

This year, for the first time, a National Debating Contest was undertaken. Beginning with inter-club debates, it proceeded through inter-district to inter-council contests, and finally to an inter-island debate. This was staged at Christchurch in May between a team from the Apiti Club (representing the North Island) and a team from the Otama Club (repre-

CAN YOU ANSWER THESE QUESTIONS?



A How does the question of "natural increase" of live stock arise in connection with stock securities?

B Is a Mortgagee liable for Local Body Rates?

C What are the arguments for and against a standard valuation of live stock for the purposes of keeping accounts?

WHO WILL BE THE SUCCESSFUL FARMERS OF TO-MORROW?

20 YEARS AGO

Practical experience and hard work were enough to bring success to most farmers.

TO-DAY

Conditions have changed. Farming is a SCIENCE and requires more SPECIALISED KNOWLEDGE than hard labouring toil on the part of the Manager or owner

TO-MORROW

The successful farmer will be the man who thoroughly understands the Business side of farming. Legal Rights, Mortgages procedure, Farm Accountancy, Farm Business Management, Fencing obligations, Compensation, Banking, etc.

The Farm Accounting Association of N.Z. have compiled a complete course of Instructions and reference covering all these subjects and many more.

Progressive and ambitious farmers both young and fully experienced, who have already studied this course, say it should be in the possession of every farmer in New Zealand.

Space does not permit giving further details here. But this is your opportunity to send for the complete Brochure which is offered to progressive and ambitious readers of the "Journal of Agriculture," without obligation and without cost.

FREE SEND FOR THIS BROCHURE

The Farm Accounting Assc. of N.Z (Inc.), P.O. Box 693, DUNEDIN.

Dear Sir,—I am interested in Farm Finance and Accountancy. Please send me without obligation your Association's Brochure and details of your home study course.

NAME .....

ADDRESS .....

..... J.A.3.40.

senting the South Island), and resulted in a win for Apiti. The standard of debate at this final was extremely high, a fact that was commented upon by the adjudicator, Dr. Field, of Canterbury University College, and reflected great credit on the contestants.

The National Centennial Memorial Tree Planting Scheme is meeting with a fair measure of success. Close on 2,000 trees, mainly of ornamental varieties, have been procured by clubs in both islands from the Christchurch Botanic Gardens, which source of supply was made available through the Department of Internal Affairs, and a number of other clubs have obtained supplies locally. The Otago-Southland Council has arranged for clubs within its area to secure trees from various sources, and altogether a very creditable effort is being made.

Clubs are carrying out the Centennial Memorial idea in varying ways, planting being undertaken in domains, parks, show grounds, etc., and, taking existing circumstances into consideration, the movement generally can be congratulated on its effort.

Activities Generally

Broadcasting of talks by club members over the main national stations has been continued during the year. A very wide range of subjects has been covered, many of the talks being prepared by clubs quite recently formed, and it is of very great interest to note the high standard of knowledge displayed.

There have again been several educational weeks held during the year, but experience has shown that more control of such activities would be of benefit. Limiting these weeks should result in a better response to each and a greater individual success. This matter, however, is not of very great importance today, as activities of this nature will probably have to be abandoned until after the war, but it is well worth noting for the future.

Tours were held by the Wanganui and Manawatu districts, and several others had been arranged but were finally postponed. The tours undertaken were well conducted, and reflected great credit upon the members participating. Although such tours can no doubt be classed as non-essential, there can be no question of their value in broadening the outlook of members, giving them the opportunity to view farming practices different from their own, and making them familiar with new methods.

Visiting Members

To assist in marking the New Zealand Centennial, invitations were extended to Y.F.C. organisations throughout the Empire to visit the Dominion during 1939-40. Because of war conditions all but one of these organisations found it necessary to decline the invitation. The Y.F.C. organisation of Western Australia sent two representatives, who spent about seven weeks in New Zealand as the guests of our federation, travelling extensively over both islands, visiting many farms and places of interest en route, and being suitably entertained and billeted in most centres.

A general review of the year's work indicates that while there has necessarily been some diminution of activities towards the end of the period, there has been no lack of keenness and enthusiasm among members as a whole, and no lessening of the determination to make our Y.F.C. movement the greatest revitalising factor in the agricultural history of New Zealand.

Appreciation

In conclusion, I wish on behalf of the federation to thank the Minister of Agriculture, Hon. W. Lee Martin, for the keen interest that he has continued to take in the Young Farmers' Club movement, and for his assistance through the Government in the way of a substantial grant towards the funds of the federation. I also wish to thank the executive and other officers of the Department of Agriculture, who have been of such material assistance in the active carrying on of the movement. I also wish to acknowledge the assistance rendered to the clubs and other units of the organisation by A. and P. societies, breed societies, agricultural colleges, research institutions, the New Zealand Farmers' Union and Women's Division, and to thank all others, both within and outside the organisation, who by their interest and assistance have contributed in so many ways to the progress of the movement.

Deserving of special mention are the many senior and advisory members who have done so much to assist in establishing the Young Farmers' Clubs and to keep them working towards ends which will be of benefit to the members and the agricultural community generally.

As we review the past so should we look to the future, and though the way may appear to be beset with uncertainties and difficulties which may be hard to surmount, they may all be successfully overcome if we strive to go forward with fortitude and determination, continue to live and work with keenness and enthusiasm, and face the future with courage and the will to win. Even as the generation of our fathers answered the call and maintained the traditions and the freedom of our Empire, so may we!

(Signed) E. W. BARNETT,
Dominion President,
New Zealand Federation of Young Farmers' Clubs (Inc.).

Decisions of Annual Meeting

ABOUT 40 delegates and representatives from both Islands attended the annual meeting of the New Zealand Federation of Young Farmers' Clubs in Christchurch on July 24. The Dominion President, Pilot Officer E. W. Barnett, who is at present engaged in flying instruction at the R.N.Z.A.F. Station, New Plymouth, presided, and submitted a comprehensive report of the year's work and progress of the organisation.

Among matters of importance discussed at the meeting was the policy of the Federation in the face of present conditions. It was considered necessary to abandon all non-essential activities, such as educational weeks, tours, etc., but it was unanimously agreed that every effort should be made to maintain the movement, and that to further this end individual members should be urged to attend as many club meetings as possible, and should strive to acquire knowledge through their clubs to fit them to aid materially in increasing production. It was considered that all units of the organisation could play their part in the war effort, and a number of definite proposals were brought forward.

As all clubs are faced with depleted membership because of enlistments, the need for enrolling as many of the younger members of the farming community as possible was stressed. It was decided that clubs should con-

tact all young men coming into country districts as farm workers in an endeavour to interest them in club activities.

The Centennial Tree Planting Scheme was reviewed, and it was shown that despite the difficulties encountered upwards of 40 clubs were taking part, about 3000 trees being planted in parks, domains, showgrounds, motor camps, etc., under the scheme.

Scholarships and bursaries for Y.F.C. members were dealt with, the general opinion favouring short courses at agricultural colleges in special subjects for the purpose of the scheme rather than the present full-year scholarships.

A scheme suggested by South Canterbury delegates for the settlement of young men on the land was considered, and a deputation appointed to interview the Minister of Lands in order to enlist his sympathy and possible assistance.

Remits from the various councils were dealt with, and included matters relating to the increasing of production, stock judging rules, and co-operation with other bodies.

Pilot Officer E. W. Barnett was re-elected Dominion President for the ensuing year, tributes being paid to his work in the past. Mr. H. G. Stephens (chairman of the Canterbury Council) was elected Dominion Vice-President.

The fact that the younger men were now coming to the fore and holding the important offices was pleasurably commented upon by the advisory members. The previous vice-president, Mr. D. F. Coleman, North Canterbury, who is at present serving overseas, was also an active club member.

Amuri Club's Field Day

W. P. BELTON, Hon. Secretary, Amuri Club.

THE Amuri Club held a field day on June 22 on the properties of Messrs. T. C. Robinson, "Mt. Palm," G. J. Reid, "Grassington," and Mrs. R. Gould, "The Hermitage." The party, numbering about 30, assembled at Mr. Reid's property, where Mr. Reid gave an address on "Half-bred Sheep," demonstrating his points with sheep penned up for that purpose. An inspection of a nearby pasture followed, Mr. A. S. Nash, Department of Agriculture, demonstrating and giving a short talk on "The War Effort as it concerns Farmers."

Members then travelled by car to Mrs. R. Gould's property, where an inspection was made of the sheep dip and yards. The dip was of the U-type, of which the manager, Mr. J. Gibb, spoke very highly, saying that he had found that type of dip very satisfactory when dipping large mobs.

Mr. A. C. R. Robinson then conducted the party over "Mt. Palm." Following this, the members were the guests of Mr. and Mrs. T. C. Robinson at afternoon tea. Mr. G. Heuston, on behalf of those present, thanked Mr. and Mrs. Robinson for their hospitality. A tour over the paddocks then took place, pastures and sheep being inspected.

The stately plantations are a remarkable feature of "Mt. Palm," and consist mainly of eucalypts and pines, many trees towering to over 100 feet. On the lee side of a plantation of pines it was astounding to see a belt several chains wide of self-sown trees growing so thickly that it was difficult to walk through.

The day came to an end with an examination of the woolshed and farm buildings, and at the conclusion Mr. H. D. Bowron thanked all those responsible for making such a successful and enjoyable field day possible, especially mentioning Messrs. A. C. R. Robinson, G. J. H. Reid, and J. Gibb.

Mid-Canterbury Annual Debate

R. INCH, District Secretary, Mid-Canterbury.

THERE was a large attendance at the Mayfield A. & P. Association rooms on July 1, when the annual debate between the Young Farmers' Clubs in Mid-Canterbury for the Rotary Cup was held. The debate was keenly contested, the subject being "That the Activities of the Department of Agriculture Are in the Best Interests of the Farmer."

The Mayfield Chairman, Mr. M. F. Mulligan, welcomed the visitors, and then vacated the chair to Mr. J. Fleming, District Chairman. Mr. Fleming introduced Mr. S. Freeman, Dominion Organising Secretary, and Father Daly, Ashburton, who acted as judge for the contest.

The Mayfield team (M. F. Mulligan, E. Rowel, and L. Doyle) took the affirmative in the first round, with the Hinds team, E. Rhodes, L. Watson, and E. Withell, as their opponents. In the second round, Ashburton (J. Burrowes, S. Watson, and C. Davidson), affirmative, debated with Methven (R. Penny, G. Macale, and R. Wightman, negative).

After the supper interval, Father Daly reviewed the debates. He gave his decision to the Hinds team as winners, and criticised the points of the various speeches, explaining their weaknesses and showing how these could be avoided. He specially mentioned the two best speakers, J. Burrowes and R. Wightman, who were first equal in the individual marking.

Mr. W. H. Amos presented the cup on behalf of the Rotary Club, and congratulated the speakers on their great improvement since the previous year. The Hinds team will represent Mid-Canterbury at the inter-district debate to be held in Ashburton during August.

Votes of thanks to Mayfield for their hospitality and to Father Daly for acting as judge brought the evening to a close.

Wanganui District Debate

A. R. DINGWALL, District Secretary, Wanganui.

A DEBATE in the first round of the Wanganui District contest was held in the Clifton Hall, Bulls, on July 4, the subject being "That Girls Should Be Admitted to Young Farmers' Clubs." The Bulls Club team, comprising F. Thorby (leader), S. H. Last-Harris, and C. Mullins, took the affirmative, against the Westmere Club team, J. Taylor (leader), K. Taylor, and W. Chesswass, who took the negative. Mr. R. A. Dalrymple, Advisory President of the Bulls Y.F.C., presided, and Mr. Laurenson, Marton, acted as adjudicator.

Apart from discussion of the more serious considerations, the subject under debate permitted scope for treatment in lighter vein, and contestants availed themselves of the opportunities to exploit both aspects to the full. The affirmative team championed the admission of girls to clubs because of their organising abilities, quick intellect, and promptness in taking action, but this was humorously countered by reference to knitting, gossip, distraction caused by the fair sex on the farms, and by the pronouncement that "woman's place was in the home."

After seventy minutes of friendly rivalry the decison was given to the affirmative by the narrow margin of 315 points to 313, the adjudicator commenting very favourably on the debating ability shown by the contestants. As winners in this round the Bulls Club team will compete against Marton Club in the second round, and the winners of this contest will meet the finalists in the Waimarino-Mangaweka-Taihape triangular contest, which is at present being carried out.

Rugby Football Match

W. G. NEILL, Hon. Secretary, Kakepuku Y.F.C.

A FOOTBALL match between Kakepuku Y.F.C. and Otorohanga Y.F.C. was played at Island Reserve, Otorohanga, on May 22. Two very evenly matched teams took the field, and Mr. D. Hemera was the referee.

A. Bell crossed the line shortly before half-time for Otorohanga's first try. R. Perreal converted. Kakepuku quickly replied with a fine try by A. Cleaves, who also converted. After half-time both teams found difficulty in handling a greasy ball, but after a forward rush by Otorohanga, R. Chilcott scored. L. Strawbridge failed to convert.

Otorohanga repeated these tactics, and A. Bell again scored. R. Perreal's kick failed. Kakepuku rallied, however, and a few minutes before full-time E. Hopking scored for Kakepuku. A. Cleaves failed to convert. The final score was: Otorohanga 11, Kakepuku 8.

Otorohanga entertained the visitors to afternoon tea. Mr. B. Boswell thanked their hosts on behalf of Kakepuku Y.F.C., and all present voted the day a great success. Mr. D. W. McCormick replied on behalf of Otorohanga Y.F.C.

Sheep Dog Trials

A VERY interesting sheep dog trial was held on May 25 by the members of the Johnsonville Club. This was the first event of the kind in the district, and as an initial effort its success was very encouraging.

The actual trial was over a simple course, as it was a new experience for all members. The farmers of the district were invited, and an attendance of over 50 gathered to watch the 11 competitors pen the sheep. The awards were as follows:—

E. Hyde, 1; N. Bryant, 2; W. Bryant and F. Brown, 3rd equal.

Afternoon tea was served by the club members, and various speakers thanked the judges (Messrs. McCallum and Wind), and also the visitors for their support. The paddock was lent by Mr. P. Tulloch, and the sheep by Messrs. Wright, Stephenson & Co.

Among the Clubs: Reports on Activities

Western Southland.

Dipton.—Arrangements for club concert. A debate held "That Radio Has More Influence in the World Today Than the Press." D. Milligan, W. King, B. Wilson, and R. Milligan comprised the negative team, which defeated the affirmative side (M. English, B. King, I. Ballantyre, and M. Wilson) by a narrow margin. The following club members were chosen to represent the club in inter-club debate: D. Milligan, M. English, B. King, R. Milligan, and B. Wilson.

Drummond.—An address was given by Mr. Gardiner on "Ploughing." At a previous meeting impromptu speeches were held.

Thornbury.—Practice debate held, the Rev. Mr. Watson acting as judge. At a previous meeting Mr. D. McPherson, Waianiwa, gave an account of his visit to Java.

Wyndham.—Report of field day held at Makarewa. Questions and discussion on farming topics by members.

Eastern Southland.

Balfour.—Arrangements for football match with Five Rovers Y.F.C. Three club members, D. Lamb, L. Mulqueen, and I. George, each gave five-minute speeches. At a previous meeting a talk entitled "Ways and Means to Increase Production for the War Effort," was given by Mr. S. D. Blomfield.

Crookston.—Arrangements for football match with Moa Flat Club. Mr. R. Allan, an ex-member of the crew of the Norwegian whaling vessel, "C. A. Larsen," gave an address on "Whaling in the Antarctic." Supper was supplied by the W.D.F.U. At a previous meeting Mr. W. Faithful, Department of Agriculture, spoke on "Pasture Management and Top-dressing."

Five Rivers.—General. Talks on "Travel" by Messrs. A. Rouse and G. Hamilton. At a previous meeting it was decided to hold a dance to raise funds for the Patriotic Fund. Debate held with Lumsden Farmers' Union, "That the Young Farmers' Club Movement Has More Life and Support Than the Farmers' Union Movement." Won by the club which took the affirmative.

Maitland.—Donation of £2 2s to Patriotic Fund. Impromptu speeches. At the annual meeting the following officers were elected:—Advisory president, Mr. H. P. McIntyre; chairman, A. A. McKenzie; vice-chairman, R. White; secretary and treasurer, W. R. Thayer.

Otama.—General business. Mr. C. Bowmar spoke on "Grassland Management and Matters Leading to the Success of Stock in General."

South Otago.

Clinton.—General business. Centennial Tree Planting Scheme discussed. Mr. C. Whiteman, Wairuna, told the meeting of his experiences in New Guinea, where he lived at one time.

Lawrence.—Donation made to the Red Cross Fund. Tree Planting Scheme discussed. General discussion.

Milton.—General. Mr. A. B. Stewart spoke on "Red Cross Work."

Stirling.—General business. A talk entitled "Diseases in Livestock" was given by Mr. G. Reid, Department of Agriculture.

Warepa.—Ball to be held; proceeds to Patriotic Fund. Two new members elected. Arrangements for club debates. Mr. W. R. Christie spoke on "Trees—The Pinus Family and Bluegums." The speaker mentioned the

most suitable soils and location for these species, and also referred to their timber and shelter value. At a previous meeting a talk entitled "Grass Seeds" was delivered by Mr. L. Christie. This address was followed by a competition in naming samples of grass seeds.

Central Otago.

Arrowtown.—Business Meeting.

Roxburgh.—General business. Talks were given by club members as follows:—A. Bain, "Farming in General"; and L. A. Henderson, "Parasites."

Upper Clutha.—General business. Discussion on farming in the Upper Clutha district. At a previous meeting Mr. W. L. Williams gave a talk on "The Care of the Farm Orchard."

Dunedin.

Palmerston South.—Mr. S. H. Saxby, Department of Agriculture, gave a motion picture display, the following films being exhibited:—"The Life of Plants," "Salt of the Earth," "Destruction of Rats," and "The Skin Game."

West Taieri.—General business. Joined with Farmers' Union in a discussion on "Increasing Production." At a previous meeting Miss Barron spoke on "Germany."

North Otago.

Five Forks.—Talk by Mr. C. Johnston entitled "Wheat Growing in North Otago." At the annual meeting the following officers were elected:—Advisory president, Mr. M. Austin; chairman, H. Newson; secretary, I. Muldrew.

Hampden.—Dance to be held, the proceeds of which will go to the Patriotic Fund.

Papakaio.—General business. Mr. Hurst gave a talk on "Geology of the District." He also read an article on "Grassland Farming and Stock Management under Irrigation."

Tokarahi.—General. Mr. Ingram spoke on various subjects of agricultural interest.

South Canterbury.

Albury.—Arrangements for debate. Mr. T. Powell spoke on the "Douglas Social Credit System."

Geraldine.—General business. Entertained Toc H to an evening. Debate held between the two organisations on "Are People Happier with Modern Inventions?" The teams were:—Geraldine Club (affirmative), H. Wooner, K. Hibbs, J. Thatcher; Toc H (negative), Rev. Lafsley, A. K. Easterbrook, M. Watson. Mr. McGuigan decided in favour of the Toc H team. At a previous meeting Mr. Wraight, Department of Agriculture, spoke on "Manures and Their Use in Improving Soil Fertility."

Maungati.—Arrangements for club debate. Impromptu speeches.

Milford.—Decided to attend stock judging competition at Lincoln College. Club debates to be held. A parcel to be sent to Sergeant A. Caithness, who is on active service. Talks on stock by members: R. Bisdee, "Judging of Sheep"; R. Palmer, "Dairy Cows"; A. Johnston, "Pigs." At a previous meeting Mr. A. Grant, Department of Agriculture, addressed the meeting on "Linen Flax." A club debate was held, the subject being "That the Irrigation Schemes in Canterbury Will Prove Beneficial to the Farming Community as a Whole." The negative side (N. Palmer, J. Woodhead, A. D. Crossman) gained the decision over the affirmative team (R. Dale, E. Crossman, and R. Bisdee). Mr. G. Mulligan acted as adjudicator.

Pleasant Point.—Mr. H. E. Carter, Workers' Education Association tutor, addressed the meeting and also acted as judge of the club debate. The subject of the latter was "That Root Crops are the Most Satisfactory Means of Wintering Stock." A. D. Talbot, W. J. Skinner, O. R. Chapman took the affirmative, and F. R. Clarke, W. B. Cartwright, and D. M. France, jun., spoke for the negative.

Waihaorunga.—A talk entitled "Life Assurance and Fire Insurance and Their Relationship to Successful Farming" was given by Mr. Kirk, Waimate. Field day held at Redcliff. Mr. F. Brown demonstrated on draught horses and Border Leicester sheep. There was an attendance of 28, including nine members of the general public and five visitors from neighbouring clubs.

Mid-Canterbury.

Ashburton.—Mr. S. Freeman, Organising Secretary, spoke on "The Formation of Young Farmers' Clubs," and outlined the war effort that could be achieved by this organisation. At a previous meeting the proceeds of a club social, which amounted to £1 3s 1d was donated to the Red Cross.

Hinds.—Decided to attend stock judging competitions at Lincoln College. Club debating team selected, E. Rhodes (leader), E. Withell, and L. Watson.

Methven.—Annual speaking contest for Mr. R. Dunkley's cup. There were two subjects—"Means of Rapidly Increasing Farm Production for War Purposes" and "If I Were Minister of Agriculture." The judge, Mr. J. W. Dent, commented on the high standard of the ten speakers, and placed the first three as follows:—R. Wightman, 1; G. McCall, 2; A. McKay, 3.

Christchurch.

Darfield.—Mr. J. Deans, of "Homebush," gave an interesting lecture on "Forestry," and also showed the meeting pictures of European and American forestry methods. At a previous meeting an impromptu debate, "That Daughters of the Land Should be Admitted as Members of Young Farmers' Clubs" was held with the three members from the West Melton Club. The Darfield Club took the affirmative, and were declared the winners.

Ellesmere.—General business. Proceeds of annual ball (£3 13s 6d) to be divided between Red Cross and Patriotic Fund. Debate held between club and Farmers' Union, the subject being "It is Essential for the Welfare of the New Zealand Livestock Industry that the Embargo be Lifted." Messrs. H. G. Stephens, W. L. Hurford, and C. S. Tod represented the club and took the affirmative. Farmers' Union speakers were Messrs. R. G. Bishop, W. S. McLaughlin, and D. M. Lill. The judge, Mr. L. Farrant, declared the Farmers' Union winners by 307 points to 277.

Springston.—General business. Card evening held with the Springston Sunshine Club.

West Melton.—Inter-club debate with Darfield. The teams were: J. Stewart, K. Jarman, and H. Evans (Darfield), and W. M. Dunlop, R. V. Hille, G. G. Calder (West Melton). The judge, Mr. F. Bull, placed Darfield first, with 297 points to this club's 270.

North Canterbury.

Amberley.—Arrangements for annual dance. Junior judges appointed for the Amberley A. and P. Show. Mr. A. S. Nash, Department of Agriculture, gave a lecture on "Increasing Production and Harvesting Linen Flax."

Amuri—Arrangements for annual ball. Address by Mr. Miller on "How a Breed of Wheat is Evolved." Mr. A. S. Nash, Department of Agriculture, spoke on "Linen Flax."

Cheviot.—General. Movie picture entitled "The Caterpillar."

Cust.—A lecture was given by Mr. J. E. Strachan on "The International Situation in Europe."

Hawarden.—Annual dance realised £16 1s, which was donated to the Red Cross. Mr. Lawrence, advisory president, resigned, having enlisted for Overseas Service. A presentation was made in recognition of his services to the club. Mr. R. Mason was selected to fill the vacancy. Mr. R. I. Black lectured on "The Use of Farm Implements." At a previously unreported meeting Mr. W. H. McIntosh spoke on "Pig Production." A short talk was given by Mr. W. W. Hubbard, Department of Agriculture on "The Duties and Services of Inspectors of Stock."

Scargill-Omihi.—General business. The possibility of members learning how to build stacks was considered, and a discussion took place on "Sheep Farming v. Agricultural Farming."

Westland.

Murchison.—General business. Mr. D. R. Conway spoke on "Life in the British Navy During the Last War."

Nelson.

Moutere.—Tree planting scheme discussed. A talk was given by Mr. J. G. Ingram, Nelson, on "A Colonial's Impressions on a Trip Overseas."

Marlborough.

Flaxbourne.—General. Lecture by Mr. A. F. Loe entitled "Racehorses and Farming in General." At a previous meeting Mr. D. R. Wilkie, Department of Agriculture, spoke on "The Growing of Linen Flax."

Wairarapa

Alfredton.—General. A talk on "Winter Feeding of Stock" was given by Mr. N. Lamont, Department of Agrculture.

Carterton.—Farewell to be given members of Third Echelon, and a small suitable present to be given each man. Demonstration arranged for the pupils of the Carterton District High School. Mr. B. Roberts, M.P., spoke on "Increased Production."

Martinborough.—Decided to hold a social evening. Members spoke on various farming subjects, and were judged by Mr. A. B. Martin. The points gained in this competition count for the Campbell Sewers Memorial Cup. Supper was provided after the meeting.

Manawatu.

Apiti.—Team entered for the Viles Shield competition, Mr. J. Kilgour being elected coach. Donation of £5 made to Sick and Wounded Fund. Mr. W. McKay lectured on "County Administration," dealing in particular with the Government subsidy for rural houses.

Bunnythorpe.—Decided to give full support to the shearing competition and to donate £3 towards the running expenses. Arrangements for annual dance. Mr. E. P. Neilson spoke on the "Herd Improvement Plan."

Colyton.—Two new members elected. Shearing competition discussed. An address was given by Mr. J. Williamson on "Farming in North Auckland." Field day held at Cheltenham Dairy Company, Makino. Messrs. H. E. Thurston and E. Sinclair spoke on "Pig Management."

Feilding.—Manawatu shearing competition to be supported to the extent of £3. Mr. J. Hill Motion, B.Sc., M.R.C.V.S., spoke on "Feeding Efficiency in Dairy Cattle." Pupils of the Feilding Agricultural High School and members of Farmers' Union were also present.

Johnsonville.—Farewell to be arranged for two club members leaving in the Third Echelon. A talk entitled "Improvements in the Dairy Herd" was given by Mr. Nielsen, of New Zealand Dairy Board.

Kairanga.—Sheep shearing competition discussed. Debate between Feilding and Kairanga Clubs. At a previous meeting a debating team was chosen to represent the club in the Viles Shield Competition. Mr. L. Earl, Department of Agriculture, showed a number of films, including "Blowfly," "Salt of the Earth," "Wheat or Weeds."

Levin.—A talk by Mr. J. J. Stevenson on Fertilisers and various other subjects of an agricultural nature. At a previous meeting arrangements were made for a club dance.

Opiki.—General business. Mr. Nielsen, N.Z. Dairy Board, addressed the meeting on "Herd Improvement."

Oroua Downs.—Field day to be held. Shearing competition discussed. Letters of congratulation sent to Levin Club for their win in the recent debate with this club. Mr. H. A. Bayley, Department of Agriculture, spoke on "Increased Production Through Control of Disease in Stock."

Otaki-Te Horo.—General business. A talk entitled "Traffic Problems" was given by Mr. J. Shearer.

Pohangina Valley.—General. Mr. H. A. Bayley, Department of Agriculture, spoke on "Pig Diseases—Their Control and Remedies."

Rongotea.—General business. Shearing competition discussed. Decided to support Oroua Downs Club's field day. Mr. A. Pedley, Rongotea Horticultural Society, gave information relative to the Y.F.C. root crop and fruit classes to be held at the society's forthcoming show. Talk by Mr. J. P. Gloyn and Mr. J. H. Gibbons on "Concrete on the Farm," which was broadcast recently over 2YA.

Shannon.—Arrangements for annual dance. Mr. S. Barber spoke on "General Economy in Connection with the Saving of Sacks and Balewire." Two talks were given by Mr. Carter. "The Government's Policy re Primary Products" and "Line Breeding."

Waituna.—General. Y.F.C. shearing competition considered. Selection of a suitable speaker to broadcast the club talk over station 2YA. At a previous meeting it was decided as a war effort that members who have finished their own crutching will offer their services to farmers whose men have enlisted. Mr. Wenzell spoke on "Wool."

Whakarongo.—General. A combined meeting of Y.F.C. and farmers of the district. Mr E. P. Nielsen gave a lecture on "Herd Improvement."

Wanganui.

Taihape.—An endeavour to be made to raise funds for the Red Cross. Mr. R. Gordon gave an account of his trip overseas, describing the farming conditions operative in England, Scotland, Canada, and U.S.A.

Waimarino.—General business. Mr. J. Kennedy, Karioi, has offered the club the use of 10 acres of land for the duration of the war.

South Taranaki.

Hawera.—Two new members elected. Presentations were made to D. Gray and J. Quin, who are leaving the district. The speaker for the evening was Mr. Milton Bailey, who spoke on "Modern Pig Production."

Kaponga.—General business. A table-tennis ladder competition was started.

Central Taranaki.

Cardiff.—Day arranged for clearing ground in which to plant trees. Radio talk to be prepared by club.

Midhirst.—Mr. Hollard, Stratford, spoke on "A Land Settlement Scheme for Young Farmers," and Mr. Sorenson, Pig Supervisor and Recorder, lectured on "Pig Production," which he illustrated with lantern slides.

Pukengahu.—General business. G. Burgham gave an account of the formation meeting of the Central Taranaki District Committee. The same speaker also described a recent visit to a Te Awamutu pig farm.

Toko.—General business. Messrs. L. Marfell and G. Were spoke on "The Appeal for Increased Production."

North Taranaki.

Hillsborough-Tarurutangi.—Flying Officer E. W. Barnett, president of the Federation, outlined ways that members can contribute to the war effort, and also gave a talk entitled "Training of Air Force Personnel."At a previous meeting Mr. J. G. Hopkins, Department of Agriculture, showed the meeting a number of lantern slides on "Ensilage Making."

Inglewood.—General discussion on farming topics of seasonal interest.

Karawaka.—General business. Club dance to be held. Arrangements for debate.

Mangamahoe.—Business meeting.

Mangorei.—Arranged for working bee to plant trees as a Centennial Memorial. A talk entitled "Sheep Farming" was given by Mr. Periam of "Meanstoke" Junction Road.

Omata.—General business. Club Roll of Honour to be kept of members on active service.

Southern Hawke's Bay.

Woodville.—Southern Hawke's Bay field day discussed. Arrangements for annual dance. The talk for the evening was "Grass Control and Rotational Grazing on Dairy Farms," and was given by Mr. H. de O. Chamberlain, Department of Agriculture.

Central Hawke's Bay.

Onga Onga.—A series of three or more card parties and dances to be held, the proceeds to go to the Red Cross. P. Bradley spoke on "Pigs," and K. Halliwell gave a talk on "Dairy Cows."

Waipukurau.—General. Talks by club members "Pig Producing" (G. Wilson), "Report on Wellington District Council Meeting" (N. Giblin), "Income Tax" (J. Mackie).

Northern Hawke's Bay.

Matapiro.—Arrangements for dance. The speaker for the evening was Mr. H. Hyde, Matapiro, his subject being "Trees." Mrs. Lamont, a club supporter, provided supper at the conclusion of the talk. At a previous meeting the future activities of the club were under discussion.

Meeanee.—New member elected. Arrangements made to raise finance for our district committee's funds. Impromptu debate on "The Relative Merits of Concrete and Wooden fencing Posts." The team supporting the wooden variety were given the verdict by a narrow margin. At a previous meeting the question as to the most suitable time to dehorn dairy cattle was discussed, and Mr. E. E. Goodall, master mariner and scoutmaster, gave a demonstration of rope-splicing and knotting.

Nuhaka.—Profit from dance (amounting to £5 2s 8d) donated to Patriotic Fund. Mr. F. T. Woodley gave a lecture on "Education."

Taumarunui.

Taumarunui.—General business followed by impromptu speeches by members. This innovation proved an outstanding success.

Te Kuiti.

Mokauiti.—General business. A social to be held.

Otorohanga.—Two new members enrolled. Selection of debating team. Talks were given as follows:—"Centennial Exhibition" (M. Shields); "Y.F.C. Constitution" (S. Tye); "Treatment and Care in Handling Farm Horses" (D. W. McCormick). At the club's third annual ball held recently Mr. K. M. Montgomery, Department of Agriculture, presented the F.A.C. Challenge Cup to the winner of the district judging competition. As R. Miln, the winner, was absent on active service, his father accepted the trophy on his son's behalf. The profits from the ball (£15 10s) was donated to the Patriotic and Red Cross committees.

Eastern Bay of Plenty.

Edgecumbe.—Challenge issued Waimana Club to play a game of football. Short discussion on the debating subject "Town Life is Superior to Country Life."

Westren Bay of Plenty.

Kati Kati.—General business. Decided to enter a team in seven-a-side football tournament at Omokoroa.

Paengaroa.—Decided to donate £10 to district committee's funds. Mr. G. Whitham, Consulting Officer of the N.Z. Dairy Board, spoke on "The Activities of the Bay of Plenty—East Coast Herd Improvement Associations."

Tauranga.—Dance in aid of Sick and Wounded Fund to be held. Debate to be held with the Farmers' Union. All members took part in an impromptu speech competition. Mr. A. V. Allo, Department of Agriculture, acted as judge.

Te Puke.—Two new members enrolled. Mr. D. S. Ross donated £2 2s to club funds. Decided to enter team in seven-a-side football tournament.

Te Puna.—Dance to be held in aid of Patriotic Fund. A talk on "Calving" was given by Mr. F. Keam.

Waikato.

Cambridge.—Football match to be played against Te Awamutu. Mr. A. W. Green spoke on "Farm Shelter Trees" and also on "Grafting and Budding Fruit Trees and Shrubs." A field day was held on Mr. W. C. Wallace's Clydesdale stud. Mr. Mullins, Department of Agriculture, lectured on "Diseases of Horses."

Hauraki.—One new member enrolled. Mr. Niblock, public accountant, spoke on "Compiling Taxation Returns."

Kakepuku.—Football match to be played against Cambridge Club. Inter-club debate, "That Secondary Industries should be Supported in New Zealand." Otorohanga (affirmative), S. Tye, D. McCormick, and C. Murphy scored 256 points, and Kakepuku (negative), W. Neill, P. Ray, and S. Hopping gained 248 points. Rev. M. Sullivan, Te Awamutu, acted as judge. At a previous meeting a lecture on "The Stock Acts" was given by Mr. G. B. Melrose, Department of Agriculture.

Tauhei.—General business. Arrangements for dance.

Tahuna.—Club to donate £2 to Sick and Wounded Fund. Mr. Walker showed films on "Pollination."

Te Awamutu.—Roll of Honour to be kept. Mr. G. B. Melrose, Department of Agriculture, gave an address on "Seasonal Diseases and Their Remedies in the Dairy Herds." Field day held at "Sunnyside Nurseries." A demonstration of fruit tree pruning, budding, etc., was given by Mr. Williams, and later he conducted the party over his property.

Auckland.

Clevedon.—General. Mr. A. H. Ward spoke on "Animal Genetics."

Harrisville.—Card party realised £9 13s, and this sum was donated to Sick and Wounded Fund. Mr. Bettany, county engineer, Pukekohe, spoke on "Rural Roading Problems."

Hunua.—General. The talk for the evening was entitled "The First Principles of Breeding," and was given by Mr. K. Richardson.

Mangatawhiri.—Business Meeting.

Mauku.—Donated £5 to Sick and Wounded Fund, and a further £5 to the local Soldiers' Comfort Fund.

Warkworth.

Kaukapakapa.—Debate "Town Life v. Country Life." The teams were (town), B. Ranum, G. C. Rix, I. Hellyer; (country), N. A. Barr, T. Webster, and A. Naughton. Mr. K. A. Sneddon acted as judge, and awarded his decision in favour of the "Town Life" supporters by a small margin. At a previous meeting a debate was held entitled "That Women be Employed on Farms in Wartime." The result was a draw.

Whangarei.

Keri Keri.—General. A talk "Fruits of New Zealand," by P. Everett, Department of Agriculture.

Maungakaramea.—General. Mr. Durney, Whangarei Herd-testing Association, spoke on "Herd Testing."

Maungatapere.—A talk "Survey of Sires" was given by Mr. R. Taylor, Consulting officer of the N.Z. Dairy Board.

Dargaville.

Arapohue.—A talk by Mr. McCoy, Rings Veterinarian Company, on "General Topics, Stock Troubles and Remedial Measures."

Maroheno.—General business and impromptu speeches. At a previous meeting Mr. N. Fergus lectured on "Bee Keeping."

Tangiteroria.—Field day to be held. General discussion on various farming topics.

Health Notes for the Farm

Contributed by the Department of Health

An Insanitary Environment Can Prejudice Health and Physique

FROIM the earliest days of efforts to promote a better public health, the abatement of nuisances has been considered an essential part of such work. So much so that the officers appointed under our earliest English Act dealing with public health were known as inspectors of nuisances, a title which survived until quite recently.

The earlier pioneers in health work attributed most, if not all, of what we know as epidemics of infectious diseases to the existence of those conditions known as nuisances, insanitation in dwellings, dampness, lack of sunlight, overcrowding, offensive accumulations of fifth and garbage, keeping of animals under insanitary conditions, emanations from offensive trade processes, impure water supplies, and excessive production of smoke. To a very large extent this opinion survives to-day, and many people still think that an epidemic of diphtheria is directly due to some one or other of such nuisances.

To a limited extent these early pioneers in health work were correct in their deductions, and those insanitary conditions known as nuisances still maintain their position as important factors in the production of epidemics, and in their relation to the standard of public health. But in the larger knowledge which has been acquired as to the cause of these epidemic diseases it is now known that these conditions are not the immediate cause of such epidemics, as they are found occasionally to occur in quite good sanitary environment. Our knowledge of the life history of the organisms giving rise to these infectious diseases provides abundant proof that they do not always emanate from accumulations of filth or bad drains.

Disease Organisms

Within the limits of our present knowledge we know that infection of the human organism with certain disease-producing bacteria will, given certain favourable circumstances, produce specific infectious diseases. We know, however, that most of these disease producing organisms will live outside the human body, but that to retain their viability they require a suitable medium upon which to feed and a certain degree of warmth or moisture, and in many cases the absence of sunlight.

The insanitary conditions which we know as nuisances provide ideal surroundings for the growth of these disease-producing organisms, and thus we find typhoid fever prevailing where imperfect disposal of excreta obtains, and pulmonary tuberculosis or consumption more in evidence where overcrowding with absence of sunlight and fresh air is found. Again, these nuisances provide favourable surroundings in which these animal pests responsible for the transmission of disease to man may live and thrive.

Resorts of Carriers

An accumulation of excrement or filth inoculated with typhoid bacteria from some carrier is a favourable resort of the house fly, which in its turn infects our food and milk, and so spreads this disease. Deposits of rubbish and garbage provide both domicile and food for the plague-spreading rat. Stagnant pools of water and empty tins, harmless in themselves no doubt, provide ideal nurseries for the mosquito.

None of these states has any inherent power to produce a single disease-producing organism, but any of them has large potentialities for harm to our health.

Before operating, the surgeon prepares his patient and his surroundings by ensuring a condition of asepsis; that is, absence of germ life. We cannot go so far as this—it would be impracticable—but we can, by the prevention of nuisances, go a very long way towards suppressing factors which are favourable to the growth of disease-producing organisms, and thus prevent the spread of infectious diseases.

Insanitary Environment

We must not, however, lose sight of the fact that an insanitary environment (one subject to nuisances) can exercise a prejudicial effect on health and physique apart altogether from its possibilities for promoting the spread of infectious disease. To live under conditions subjecting one to the fumes from an offensive trade may not render us liable to infectious disease; a neighbour's neglected fowlyard may produce no immediate ill-results to health. But to be unable to eat one's dinner in comfort in the one case, or to wake up in the morning with a headache because of inability to ventilate the bedroom during sleeping hours in the other case may produce a state of unhealth, and, after all, unhealth means the same thing is ill-health.

Toleration of such surroundings can be acquired, for the human organism has a wonderful adaptability in this respect, but such toleration is acquired at the expense of health and physique. Similarly, in respect to others of the nuisances enumerated, although the immediate discomfort may not be so obvious, the lowering of health and physique may be more insidious and more detrimental.

(*Continued on page 157.*)

The Farm Home and Kitchen

Contributed by the Association for Country Education

Health-giving Meals Which Lay the Right Foundation in the Child's Life

THE first few years of a child's life are important. The foundation for his physical well-being is laid, and he is forming habits that will help to shape his later years. These "younger years" will never come again, and, if neglected, irreparable harm may be done. It is important that the foundation be strong and the habits desirable so that a healthy, happy life will be possible.

A few homes may not be able to supply everything that is deemed necessary for optimum growth, but *the fundamentals for good nutrition are within the reach of everyone. Getting adequate sleep, having regular meals, playing in the sunshine and drinking enough water are more dependent on a wise mother than on a definite outlay of money, and the foods essential for health can be purchased even on a limited budget if knowledge and judgment are used in the selection.*

". . . our present advice is that at least one-half of the needed calories be taken in the form of a protective foods. (Milk and its products, fruits, vegetables and meats.) We think it well to add to the secondary suggestion that (unless there is definite individual reason to the contrary) at least one-half of whatever breadstuffs and cereals are consumed be in the 'whole-grain' or 'dark' or 'unskinned' forms. These two suggestions take account of all known nutritional factors. . . ."

—Dr. Henry C. Sherman.

Build meals for the pre-school child (two to six years old) around milk, vegetables, fruit, and whole-grain cereals. Small servings, with second and third helpings if desired, are better than servings that are too large.

BREAKFAST (7 to 8 a.m.).

Hot cereal with milk, such as oatmeal or whole-wheat.

Tomato juice, ¼ cup, or half an orange.

Or

Cooked fruit, as prunes or stewed apples.

Bread or toast with butter.
Milk to drink, 2-3rds of a cup.

MIDDAY MEAL (12 to 1 p.m.).

Potato—plain boiled, mashed, baked, scalloped, or in soup.

One other vegetable, choosing from:

*Carrots	White turnips
*Spinach	Marrow.
*Other greens.	Onions.
*Cabbage	Beets.
*French beans	*Lettuce
*Peas	Dried split peas.
*Tomatoes	Dried beans.
*Yellow turnips	Dried lentils.

(The vegetables marked * are especially recommended. Use them frequently, one or another at least three times a week.)

One egg—boiled, scrambled, poached—three times a week. (A small piece of liver, meat or fish may be given on other days if desired, especially for the older children in this group.)

Bread or toast with butter.
Milk to drink, 2-3rds cup.

Simple dessert, if desired, such as tapioca, cornstarch, rice or bread pudding, fruit sauce, banana.

SUPPER (to 6 p.m.).

Choose one:
- Potato (or other vegetable). Milky soup.
- Creamed vegetable.
- Sliced banana with milk.
- Hot cereal with milk.
- Milk toast.

Bread or toast and butter.
Milk to drink, 2-3rds cup.
Cod-liver oil, 1 teaspoon daily.

WHY **BUY** BUTTER ??

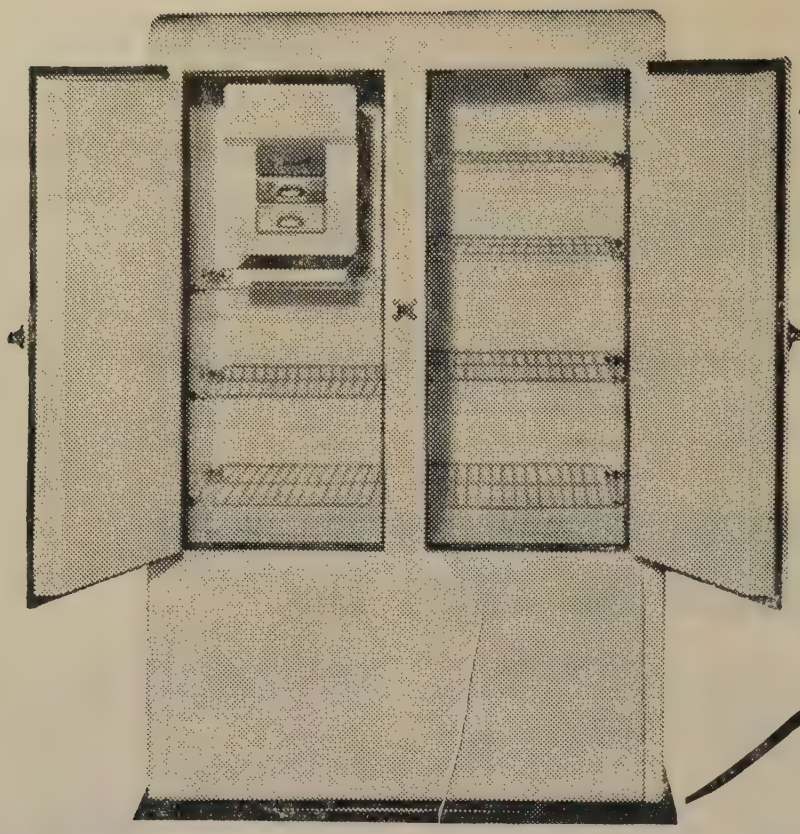
When you can make PERFECT Butter at home—in 60 Seconds and in any weather with the—

KANGAROO
ONE-MINUTE
CHURN - - -

The latest and greatest labour saver ever invented for farmers' wives, and people who keep one or two cows. . . . Simple to use (just follow the easy directions) . . . no trouble to clean (all parts metal with chilled steel container). Nothing to wear out. Actually pays for itself MANY times over in one season. Already in use in hundreds of homes. **£4/15/-**

Write for full information on this marvellous Kangaroo Churn to—

Sole N.Z. Distributors :
PREMIER PRODUCTS LTD.
HUDDART PARKER BUILDING, WELLINGTON.



What can this FRIGIDAIRE do for you in *your* home?

(read below...)

(1) MEAT You see above a Frigidaire which is specially designed to suit the needs of the modern farm home. Seven shelves provide abundant storage area. Meat may be hung on special meat rail or jointed and placed on shelves. There's enough space here to store a whole sheep.

(2) VEGETABLES

You have to experience the luxury of keeping your vegetables crisp and fresh in a Frigidaire before you appreciate its full worth. The farmer's wife who prepares her salads with lettuce, etc., taken direct from the coolness of Frigidaire, will know that Frigidaire makes better salads—keeps vegetables longer.

(3) MONEY Frigidaire saves you pounds every year by reducing food spoilage. This particular Frigidaire is not expensive to buy and is by no means expensive to run. Important, too, to the farmer is the fact that Frigidaire is supremely dependable. Other farmers in your district have invested in a Frigidaire. Ask them for particulars and arrange for a demonstration yourself.

(4) HEALTH Frigidaire makes it possible for you to be sure that ALL your food is completely hygienic. Bacteria cannot live in Frigidaire's low temperature. You can understand that milk, butter, meat, vegetables and other perishables kept fresh in a Frigidaire are safer to give your children than the same perishables kept in other places, open to attacks from flies, household dust, etc.

(5) ENJOYMENT

Your Frigidaire is the key to better meals and to better enjoyment of your "between meal" and supper snacks. With Frigidaire, sliced fruits and food of all kinds can be kept and retain their original delicious flavours. From your Frigidaire you can become host to large parties, storing all that you ever need for home entertaining and home enjoyment.

(6) CONVENIENCE

There is a Frigidaire dealer in every main town in New Zealand—thus you can be sure to get quick service whenever you want it. Frigidaire have provided a special easy payment system for farmers, with low deposits and easy terms. What is more, Frigidaire units are backed by General Motors' Five-Year Guarantee. If you fill in the coupon below, you will be sent full particulars of this Frigidaire specially built for the modern farmer.

FRIGIDAIRE

FRIGIDAIRE, NEW ZEALAND, PETONE.

Dear Sirs—

I am interested in your Frigidaire which is specially built for the farmer. Will you please send me, without obligation, full details by return mail.

NAME .....

ADDRESS .....

.....

It may seem desirable to have a light mid-morning or mid-afternoon lunch, perhaps both for a very active child, if they do not spoil his appetite for his regular meals.

Toast or bread and butter.
Half an apple or banana.
Small cup of milk.
} Choose one.

Suggestions

The general plan of meals is suitable for all children in the two to six-year-old group, although the older ones will need a large "total amount." Give them larger servings of milk, potatoes, cereals and bread.

. . . . . .

The meals as outlined include 1½ pints of milk daily. Part or all of it may be in the form of dried skim-milk, which provides the same growth material as fresh milk.

. . . . . .

Regularity in meal hours is very important. If mid-morning and afternoon lunches are given they, too, should be at a regular hour.

. . . . . .

Every child should have a small amount of tomato or orange or apple daily. When cooked or dried fruit is given at breakfast, tomato or orange should be given at the mid-day meal or at supper.

. . . . . .

Whole-grain bread and cereals contain more growth-promoting and health-protecting factors than white bread and refined cereals. Use the dark ones at least half of the time.

. . . . . .

Day-old bread and toast provide desirable exercise for the mouth. Raw carrots, yellow and white turnips and apples are also valuable in small amounts for the older children in this group.

. . . . . .

Give cod-liver oil daily all the year if the budget permits. A teaspoonful daily should give protection, although a larger amount will do no harm. One teaspoonful daily for three months is probably better protection than three teaspoonfuls daily for one month, although the same amount of oil will have been used.

. . . . . .

Cocoa, tea and coffee are stimulants which a child does not need and is better without. The cocoa provides a little food value, and tea and coffee do not. If a "bait" must be given a child to assure his drinking milk, a very small sprinkling of cinnamon and sugar is better than cocoa, tea, or coffee.

In a healthy child appetite is usually a good guide for the amount be should eat.

. . . . . .

Children should have potatoes once or even twice a day. They provide better growth material than bread and cereal products, such as rice and macaroni.

. . . . . .

Small amounts of left-over cooked vegetables can be used to make "milk soup." Add milk, butter and a little flour to thicken it, if desired, and heat, and the small amount a child needs will be ready.

. . . . . .

Sugar provides nothing of value for health and growth, and the less children have of it the better. Sweets, if any, should be given only after a well-balanced meal has already been eaten.

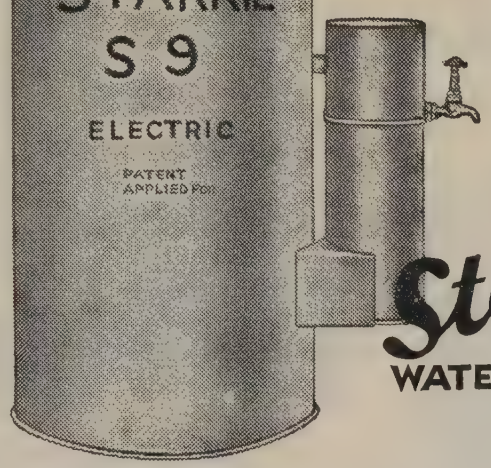
HEALTH NOTES—*Continued from page 154*

Present-day Sanitation

The aim of present-day sanitation is to secure freedom from disease, a long-term, full, and useful period of life, and as many of the amenities and comforts of life as possible for the greatest number; and of the factors making for these ends, a thoroughly sanitary environment, free from nuisances either injurious to health or offensive, is by no means the least.

The evil effects of a nusiance may be widespread, affecting others than the perpetrator. Therefore, the Legislature has rightly made the causing of a nuisance to be a punishable offence. The good citizen will, however, require no such coercive measure, and the careless citizen should recognise that he is not carrying out the golden rule "to do to others as he would be done by."

HOT and Boiling WATER FROM ONE HEATER!



Continuous hot tap service at bath, basin, sink and wash-tub—ALSO a supply of fresh BOILING water for tea making and other needs.

Enjoy this dual service in your home.

Starkie S9 WATER HEATER

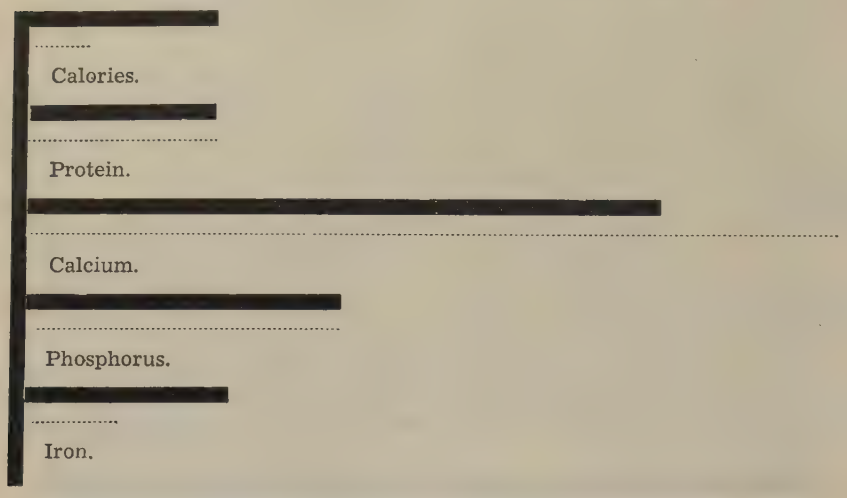
Banish slow, old fashioned water heating methods. Put this Starkie S.9. Model on duty—have all the hot water you need, WHEN and WHERE you need it. The BOILING water supply is an additional advantage—saves repeatedly boiling the kettle. Automatic day and night service at low cost. Starkie Heaters are most dependable and are backed by 20 years' experience. Get particulars from your Power Authority or direct from us.

D. HENRY & CO. LTD.
SOLE MANUFACTURERS,
12–14 NELSON STREET, AUCKLAND, C1.

Over 20,000 Starkie Electric Water Heaters have been sold for homes and farms in New Zealand. Choose a Starkie.

INSTALL A "STARKIE" WATER HEATER

A total of 1½ pints of milk daily for a three-year-old child gives—



The vitamin-content is as follows:—Vitamin A, excellent; vitamin B, good; vitamin C, none; vitamin D, none; vitamin G, excellent.

The heavy black lines indicate a child's needs for one day. The broken lines indicate the proportions of each factors furnished by 1½ pints of milk.

Summary

When a three-year-old child has 1½ pints of milk he has half the calories, all the protein, more than enough calcium, most of the phosphorus, and about one-third the iron he needs for that day. He is generously supplied with vitamins A and G, and has some vitamin B, but vitamins C and D must be supplied by other sources.

The remainder of his needs may be met by adding these foods* daily:—

2 tablespoons orange or tomato, which furnish vitamin C.

1 potato, which furnishes calories and iron.

1-3 cup cooked vegetable, which furnishes iron and vitamins A, B, G.

4 prunes, which furnish calories and iron.

¾ cup whole grain cereal, which furnishes calories, iron, and vitamin B.

3 slices whole-wheat bread, which furnishes calories, iron, and vitamin B.

½ egg (or one on alternate days), which furnishes protein, iron, and vitamin A.

1 tablespoon butter, which furnishes calories and vitamin A.

Cod-liver oil, which furnishes vitamins A and D.

*Each of these foods furnishes other factors, but they are especially important for those mentioned.

"We Are Reaching For The Home . . . "

"IF much can be done for boys to interest and instruct them in their life work, more can be done for girls," writes Dr. Seaman A. Knapp, Father of American Agriculture Extension Work. "Teach them to mend and sew and cook; how to doctor; how to dress a wound or make a ligature; how to adorn the simple home and make it appear like a palace; how by simple arrangement the environment of the home can be transferred into a place of beauty.

"The art of cooking is mainly a lost art. There are communities where not to be dyspeptic it to be out of fashion. If we could have some lessons on how to live royally on a little; how to nourish the body without poisoning the stomach; and how to balance a ration for economic and healthful results, there would be a hopeful gain in lessening the number of bankrupts by the kitchen route.

"Let it be the high privilege of this great and free people to establish a republic where rural pride is equal to civic pride, where men of the most refined taste and culture select the rural villa, and where the wealth that comes from the soil finds its greatest return in developing and perfecting that great domain of Nature which God has given to us as an everlasting estate. . . .

"A country home, be it ever so plain, with a father and mother of sense and gentle culture, is Nature's university, and is more richly endowed for the training of youth than Yale or Harvard. . . .

"It is also realised that the great force that readjusts the world originates in the home. Home conditions will ultimately mould the man's life. . . .

"The home eventually controls the viewpoint of a man, and you may do all that you are a mind to in schools, but unless you reach in and get hold of that home and change its conditions you are nullifying the uplift of the school. We are reaching for the home. . . ."

A "Savings Account" for Health

VIGOROUS health, like a bank account, will soon be depleted unless deposits are made every day through the observance of good health habits. While a monthly statement shows the balance in the bank account, the balance of the health account is less easily observed.

Withdrawals from the health account cannot be prevented, for every act of one's being—breathing, eating, working, playing—constitutes a tax on the reserve. The balance may be kept "on the credit side," however, if some of these "deposits" are made daily.

A pint or more of milk.

One or two servings of potatoes.

At least one other vegetable and a raw one several times a week.

At least two other servings of fruit, one raw.

Two servings from eggs, meat, fish, cheese, dried beans, or peas.

Several servings of whole-grain bread or cereals.

Four to six glasses of water to drink.

Eight hours of sleep.

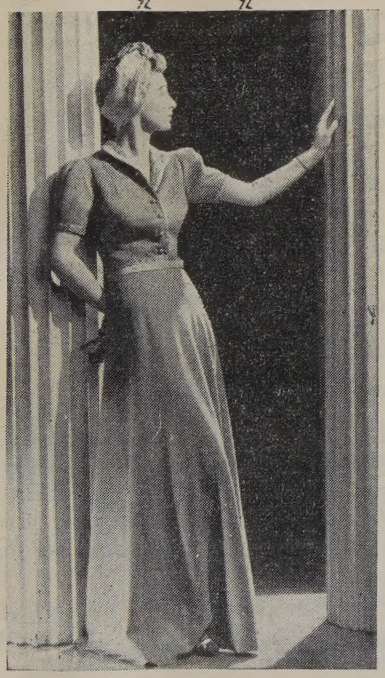
Some time in the fresh air—sunshine if possible.

Periods of relaxation—avoid fatigue in work or play.

Fashions from the International Wool Secretariat

Upper left—
Light-weight pastel pink tweed was used for this glamorous evening gown. The edge of the low decollete is trimmed with a scroll, and the skirt flows into graceful flares at the back.

Upper right—
This model in scarlet tweed has an original slanted fastening, and is worn with an horizon blue skirt.



Middle—
A matrix turquoise dress, worn with an amusing scarlet belt.

Lower left—
A deep matrix dress in fine wool dabbled with gold tapestry brocade.

Lower right—
Genetian blue and cactus green check tweed suit. The skirt has stitched flares to resemble pleats, but without their disadvantages. Blue sweater and hat and a half-belted overcoat.

Table of Contents — August, 1940

Fourteen Point Agricultural Production Plan for New Zealand—*R. B. Tennent* 81
Horse Breeding—*Livestock Division* 85
Sugar Beet for Autumn Litters—*C. J. Hamblyn and J. E. Davies* 87
Pampas Grass as Stock Feed—*P. S. Syme* .. 93
Value of Good Farm Shelter—*P. S. Syme* .. 97
Oat Varieties in Southland—*W. L. Harbord* .. 101
Pig Production Must Progress—*C. V. Dayus* 103
Slaughterings of Stock—*Livestock Division* .. 108
Establishing a Pasture under Irrigation—*G. G. Calder* 109
Pedigree Sow Records—*Livestock Division* .. 112
Electric Fencing—*Fields Division* 115
Pig Census Returns—*M. J. Scott* 125
Veterinary Notes—*Livestock Division* .. 126
Farm Practice and Management—*Fields Division* 131
The Orchard and Vineyard—*Horticulture Division* 135
The Home Garden—*Horticulture Division* .. 140
Apiary Notes—*Horticulture Division* 143
Poultry-keeping Section—*Livestock Division* 144
Young Farmers' Clubs—*S. Freeman, Editor* 147
Health Notes—*Department of Health* .. 154
The Farm Home and Kitchen—*Association for Country Education* 155

And Miscellaneous Matter.

SUBSCRIPTION RATES

The "Journal" is issued monthly. The subscription, which is payable in advance and includes postage, is 2s. 6d. a year. Subscriptions should be forwarded or paid direct to any office of the Department of Agriculture in the Dominion. Single copies, price 6d., are available from the Department of Agriculture, Private Bag, Wellington.

COPYRIGHT PROVISIONS

The articles in the "Journal" of the Department of Agriculture of New Zealand are copyright. Proprietors of newspapers and periodicals wishing to republish any matter are at liberty to do so, *provided both the "Journal" and author are acknowledged.*

The Minister of Agriculture does not accept responsibility for any of the private and trade advertisements included in this publication.

NEW ZEALAND DEPARTMENT OF AGRICULTURE

Publications Available for General Distribution

FREE BULLETINS.

51. Testing Milk and Cream for Content of Fat.
69. The Onion and its Related Species.
77. The Home Orchard.
81. Budding of Fruit Trees.
84. Orchard Establishment and the Formation of Young Fruit Trees.
96. Lemon Culture.
98 Grafting of Fruit Trees.
101. Brown Rot of Stone Fruits.
102. Vine Culture under Glass.
104. Silver-leaf in Orchards.
105. Manures and Manuring for Garden Crops.
118. The Cleaning of Milking Machines.
119. American Foul-brood and its Treatment.
137. Tobacco Culture for Small Growers.
139. The Production and Grading of Cream.
140. Caseous Lymphadenitis in Sheep.
145. Contagious Abortion in Dairy Cattle.
148. Hogget Mortality and its Prevention.
149. Moulds in Unsalted Butter.
150. Castration of Pigs and Calves.
152. Parturition of Bovines.
154. The Milking Shed.
155. Lucerne on the Farm.
157. The Rabbit Pest and its Control.
158. Precautions Necessary in Handling Sodium Chlorate.
164. Vines for the Home Garden.
166. Johne's Disease.
*168. Influence of Salt on the Flavour of Butter.
169. Packing Apples and Pears in Standard Cases.
170. Mole Drainage in the Manawatu.
*171. Internal Parasites of Sheep and Calves.
*172. Foot Rot in Sheep.
*173. "Sleepy Sickness" and Bearing Trouble in Ewes.
175. Use Care in the Handling of Pigs.
*179. Hydroponics—Growing Plants Without Soil.
*180. Cobalt Deficiency in Sheep and Cattle.

Apiaries Act and its Amendments.
*Facial Eczema in Sheep and Cattle.
*Milk Fever and Grass Staggers in Dairy Cows.
*Reprints from "Journal of Agriculture" since January, 1938.

CHARGEABLE BULLETINS.

(Cash with Order)

(If remittance includes stamps, do not include denominations greater than 2d.).

		s.	d.
66.	Utility Poultry Keeping	1	0
74.	Tomato Culture	0	6
103.	A Standard Wool Shed for New Zealand Conditions	0	6
120.	Irrigation	1	0
124.	Handling the Wool Clip for Sale	0	6
128.	Beekeeping	1	0
167.	Modern Methods of Pig Production	0	6
	New Zealand Seeds for Pasture and Lawns	0	6
177.	Layout and Construction of Modern Piggeries	1	0
	Annual list of Creameries, Factories, Private Dairies and Packing Houses, 1939	2	0

BOUND HALF-YEARLY VOLUMES of *N.Z. Journal of Agriculture* (with Index); Volumes 4-13; 15; 17-19; 27; 36-40; 43; 45-47; 55; well bound in green cloth and lettered. Price per volume 4s. 6d., or 5s. postage paid (remittance with orders).

Volumes 56, 57 and 58 (new size), 6s. 3d., or 7s. 6d. per volume, posted.

INDEXES to *N.Z. Journal of Agriculture* for Half-yearly Bound Volumes 1; 5; 7-20; 24-40; 42; 47; 53-56 Free on application.

CONSOLIDATED GENERAL INDEX of *N.Z. Journal of Agriculture*, Volumes I. to XX. (1910 to 1920). Price 2s. (remittance with order).

Spring backed covers for *Journal*. Green cloth boards with name on back. Hold six or more monthly numbers prior to January, 1938. (Not suitable for issues after December, 1937). Price 2s. 6d. each. New ones (plain back) for enlarged *Journal* since January, 1938. Price 3/-. each.

Address applications for any of the above to the Publisher, Department of Agriculture, Wellington N.Z.

MAKING NEW ZEALAND

"CATERPILLAR"

REGISTERED TRADE MARK

"LAYS THE TRACKS OF PROGRESS"

LAND CLEARING

Forest and swamp converted by modern machines into profitable farms.

From virgin bush to productive acres . . . a lifetime's arduous work now accomplished in a week with "CATERPILLAR" Land Clearing and Cultivating Machinery. Last year by their West Coast Land Clearing demonstration, Gough, Gough & Hamer proved that the way to increase National and Individual wealth is the "CATERPILLAR" way . . .

now "CATERPILLAR" Land Clearing Machinery opening up new areas throughout New Zealand . . clearing bush, grubbing stumps, draining swamps, a "CATERPILLAR" Cultivating Machinery is prepar the soil for sowing. Learn how "CATERPILLAR" help you . . . Gough, Gough & Hamer Ltd., will gla supply particulars.

GOUGH, GOUGH & HAMER, LTD.

HEAD OFFICE: CHRISTCHURCH.

Branches at: Auckland, Wellington, Dunedin, Palmerston North, Rotorua, Masterton, Hastings, Ashburton and Invercargill.